

**UNIVERSITY OF LONDON  
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**Developing environmental education in Brazilian primary schools focused on  
emancipatory actions and ecological citizenship: an action research approach**

**Thesis submitted to the degree of PhD in Education.**

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## **Abstract**

In 1997, environmental education was incorporated as one of five cross-curriculum themes in the Brazilian Curriculum for schools. Notwithstanding this, the status of environmental education in schools is generally marginal. The separation between concrete environmental problems experienced by children and environmental education practice generally results in a failure to construct a more sustainable and equitable society. Considering that teachers are important agents in the construction of an emancipatory environmental education concerned with sustainable alternatives, citizenship and social justice, this study focuses on the development of praxis-oriented research grounded by an action research methodology. The action research was developed with 36 primary teachers from four public schools in Ponta Grossa, Parana, Brazil. The goal was to provide teachers with an opportunity to reflect on their practices and to encourage changes regarding the development of their students' critical thinking and emancipatory actions towards environmental problem-solving. The analysis of the findings gathered from distinct phases of the research – teachers' planning, taking actions, evaluation and (re)planning – indicated important progress in changing pedagogical practice of environmental education. As a result of the action research, most of the participating teachers were able to move from reductionist conceptions to more complex understandings of environmental problems. The findings endorsed the importance of promoting environmental education connected with real problems experienced by children in terms of developing skills to critically analyse and implement solutions to environmental problems.

*To teachers who have been working for a more equitable world.*

*Disaster for the man who builds his house without justice ... (Jeremiah 22:13)*

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## **Chapter 1**

### **Introduction**

“If education is the solution, what is the problem?” This enigmatic question, posed by David Orr (2001), raises a challenge to education in contemporary society. There is no doubt that the environment and the associated harmful consequences of human actions represent one of these challenges for education. As a result, the reality of the environmental world has emerged as a complex subject which has to be discussed and interpreted in the educational arena. Nevertheless, the environment and education are not simple concepts; rather, both incorporate distinct notions of the world and involve complex political and social dimensions.

The Latin American writer Enrique Leff (2001) argues that environmental problems are the result of the collapse of economic rationality in contemporary society and that an environmental crisis has arisen from a crisis of civilisation. This implies the recognition that there are some limits to capitalist growth and a need for the construction of a new paradigm of sustainable development. In recent decades some concepts until recently neglected or even ignored, such as citizenship, democracy, social justice and participation, have begun to assume prominence as fundamental principles in the social transformation of the world.

In fact, despite certain international efforts to reduce inequalities and the setting out of guidelines for social and ecological welfare, many people around the world are still living in precarious conditions. Contemporary history has shown that the promise of a democratic and fair world seems to have been overwhelmed by the dominant structures of modern economies. Instead of offering alternatives to people and nature, such as the implementation of strategies to avoid consumption, modern society has been encouraging the exploitation of natural resources and is endorsing distinctly imperial positions in a capitalist society. The contradictions this leads to are evident in this study. On the one hand, the world has never before witnessed such a range of technological advances within ‘the global society’. On the other hand, many countries have been suffering the consequences of centralised politics of exclusion from ‘the global world’ in which large sectors of the

population have not been allowed access to basic environmental resources in society such as drinkable water.

It is within the complex area that lies between rhetoric and the real dimensions of environmental issues that education has played a role in responding to problematic situations from ecological and social crises. In these circumstances, some specialists have used education as a new discourse to bring about changes of attitudes and behaviour in relation to the natural world. In this scenario, environmental education is undertaking an important task with regard to ecological sustainability and social equity. For instance, Agenda 21 (UNCED, 1992) is particularly clear in this regard when it supports the notion that education is an essential prerequisite before one can begin to contribute to these changes to be brought about. The orientations of teaching towards sustainable development and raising consciousness of this matter have become prominent issues for educational principles in the area of environmental education. These principles, which are based on statements from the Tbilisi Conference (UNESCO, 1977), envisage environmental education as an important component for the creation of a sustainable environment and a fairer society. In global terms, environmental education which is associated with ideas of sustainability plays a crucial role in dealing with environmental problems and it has been backed up by international educational, political and social discourses from governments and society.

However, if environmental education by itself is a broad concept, when it incorporates sustainability notions and critical conceptions, its conceptualisation becomes more complex. Moreover, a number of conceptual problems arise from this complexity, which are due to the fact that environmental education has often been used as a synonym of 'sustainability'. In the same way, the use of critical education *for* the environment (Fien, 1993) – which emerged in opposition to concepts such as education *through* and *about* the environment – has been employed as equivalent of sustainability. The distinction between these concepts is defined by Huckle when he argues that education *for* sustainability is not only focused on a particular construction of sustainability but also based on a critical process of reflection and action in which people are able to participate in the social construction of their environment and sustainability (Huckle, 1998). Indeed, some educators who have reached the limits of environmental education have preferred to adopt



‘environmental education *for* sustainability’ as a more complete conception (see for instance Huckle, 1998).

This research adopts the use of the term ‘emancipatory environmental education’ to interpret and discuss environmental education practice through actions towards ecological citizenship. Alike environmental education *for* sustainability as endorsed by Huckle (1998), ‘emancipatory environmental education’ concentrates on the deconstruction of isolated and fragmented environmental practices and relies on subjecting its own practices to political and social analysis. As a result of this, people can acquire a richer understanding of global citizenship, social justice and equity. Such concepts are often used merely as generalisations embodying abstract ideas, while environmental education practices in schools turn into slogans without any concerns for the actual situations of the students’ real lives. The gap between discourse and concrete practice experienced by students at school is shrouded by the reproduction of what Freire defines as a ‘culture of silence’; alternatively the gap can be bridged by what Habermas calls ‘communicative action’. In this context, teachers act as more than mere dispensers of idealised knowledge which is far removed from the actual problems of the students. In practical terms, this provides education and teachers with the chance to break away from a predatory pedagogy (McLaren, 1995) and end the process of indoctrination in schools. However, it is not an easy task to cross the barriers of this complexity; it implies the construction of autonomous and concrete pedagogies which are able to deconstruct traditional practices at schools.

In Brazil, the establishment of the new National Parameters for the Curriculum (NPC, 1997) was a challenging idea for introducing innovations in the school curriculum. The new guidelines for the curriculum came out as an attempt to meet pedagogical concerns with regard to the need for broader areas related to human interests and education. For instance, topics such as race, health, environmental care, ethics and sexual education were put forward as important cross-curricular issues that should be carried out with children at schools. The new curriculum laid down that these issues should be intrinsically connected with the idea of social citizenship, democracy and equity.

As a result of these new guidelines, environmental education became an important rhetorical issue in the context of education. Notwithstanding this, in practical terms

environmental education only has a marginal status in schools. Indeed, although there has been official recognition of the need for environmental education, establishing it remains a challenge. As Marcos Reigota, one of most influential Brazilian environmental educators, has argued, the path to environmental education has been laid out by the persistence of some educators who have continually been undertaking efforts to bring about an effective environmental education. Indeed, historically significant conquests were obtained but there is a long way to go for the educators. What has been observed from the National Parameters for the Curriculum (NPC, 1997) is a general and disordered bandying about of the term. The promotion of environmental education has often proved to be shaped by a redundant, pedagogical character which lacks consistency and political engagement. Stoltman and Lidstone (2001) when analysing the perspective of environmental education and citizenship towards the 21<sup>st</sup> century, state that often both subjects have been regarded as an attractive way of engaging students and parents in the recycling and conservation of nature. In Brazil the situation is not dissimilar, which strongly suggests that it is not enough for environmental education to be officially recognised; rather it is necessary for it to be bound up with ethical principles and political struggle.

Hence, this thesis regards environmental education as a process of enlightenment of knowledge through a pedagogical practice engaged with problem-solving and based on participatory actions. In fact, environmental education should go beyond the development of skills and behaviour in issues regarding environmental protection. Protecting nature is, of course, an essential matter but it cannot be undertaken in isolation from an environmental ethic concerning political, educational and social change. In practical terms, this means that environmental education is the process of becoming enlightened about environmental issues that can give rise to a more equitable and sustainable society by carrying out concrete pedagogical actions from the students' real lives. In this situation, teachers become important agents in the construction of a new environmental practice at schools by encouraging pupils to engage in critical thinking.

The researcher decided to study environmental education and ecological citizenship as a result of her research in a Masters degree course in Sociology in 1999. Her dissertation was focused on examining the process of social organisation among a group of landless peasants belonging to the MST – Movimento dos Sem-Terra – (Social movement of

landless). The MST is a Brazilian social movement organised by peasants who do not have any land for farming since it has been lost for economic reasons. These peasants are organised in groups and attempt to occupy federal or private lands which they consider are not being fully utilised by the possessors. Although her dissertation was not aimed at discussing environmental topics, some issues such as sustainability, ecological citizenship and environmental education occurred to her as being parallel subjects in the course of the research. For instance, the researcher identified a lack of awareness on the part of some peasant leaders about the importance of working out some environmental education strategies centred on the idea of rural sustainable development when they occupied the lands for farming. Despite the researcher's interest, it was not possible to organise any activity with the peasants at that time.

In 2000 and 2001, as a lecturer in Social Work at the University of Ponta Grossa, the researcher had the chance to carry out some social and educational activities that involved primary teacher education. The researcher who had been trained to be a primary school teacher was appointed by the university to supervise activities carried out by students doing social work at primary schools in Ponta Grossa city. These activities consisted of helping teachers to deal with social problems experienced by students at schools. This experience gave the researcher an opportunity to observe that most of the social problems faced by children at schools were related to their poor environmental conditions such as health and housing problems. Moreover, the researcher noticed that often the practice of environmental education was undertaken as an end in itself with little or no engagement with the real environmental conditions of children in their communities. The teachers often mentioned the idea of 'environmental consciousness raising' as a key element in environmental care. However, in everyday practice they repeatedly complained about the lack of environmental care for their students. The teachers' attitudes raised an intriguing question in the researcher's mind: *How can teachers expect to improve environmental care which is focused on heightening children's consciousness without relating education to their social environment?*

At the same time, the researcher's thoughts were fixed on Freire's ideas about the relationship between the process of bringing about consciousness and human praxis. When in the 1990s the researcher had the opportunity to meet Paulo Freire at the University of

Ponta Grossa he came out with a valuable insight when speaking about praxis: *We don't raise anybody's consciousness. People's consciousness is raised when it is mediated by the world.* When the researcher remembered Freire's words two more questions followed: *What is education for?* and *What is the role of teachers as social agents of environmental care for children?* Indeed, these preliminary questions were very important in laying down the foundations of this study. In other words, when the poor social and environmental conditions of those children is taken into account, the idea of a kind of environmental education which is associated with citizenship and social justice serves as an alternative to improve the situation of the students. The environmental education practice which was carried out by the teachers was not able to deal with the discrepancies of social life. In connection with this, the researcher observed that there was a lack of training in ways for teachers to bring about environmental education in schools. The idea of an emancipatory environmental education which aimed at improving critical thinking and solving real problems experienced by the students seemed to be very attractive to the researcher. The outcome of this was that she felt inspired to carry out a different kind of research with teachers. This led to an action research plan and provided an opportunity to gather good data and at the same time provide suitable professional training for the teachers. Thus, the declared interest of the researcher was to study environmental education in Brazilian primary schools and this was supported by the idea of advocating that teachers adopt changing practices through a critical proposal concerning environmental education. The research is particularly focused on the following goals, which generated the research questions of this thesis:

- Analysing the interests teachers might have in fostering critical environmental education combined with emancipatory actions and solving problems.
- An investigation of the commitment teachers have to encouraging the growth of critical thinking among students in the area of environmental education connected with social justice and ecological citizenship.

In methodological terms, the study arose from a piece of critical action research which was based on local experience of environmental education and carried out with 36 teachers from four selected primary schools in Ponta Grossa, Parana State, Brazil. The criteria used to select the schools together with a general characterisation of the empirical field will be

provided in Chapter 5. For the time being, it is important to outline some justifications for the adoption of Ponta Grossa City as a research setting. First, Ponta Grossa has serious socio-environmental problems concerning health, housing and sanitation. Despite some governmental and private initiatives which have been taken to respond to this situation, the environmental problems have been increasing over the last few years. Although there has been some progress in educational concerns with regard to environmental education, they can still be considered as embryonic. Second, a large part of the Brazilian analysis of environmental education has examined experiences in São Paulo and Rio de Janeiro. In view of this, this research provides an opportunity to widen the environmental debate through a description and discussion of the development of an environmental education practice from a different spatial, cultural and social perspective.

This research is divided into 10 chapters. A discussion about environmental awareness as an international concern and its historical origins and the growth of environmental education is the main aim of Chapter 2. In addition, notions of sustainability and sustainable development are raised in this chapter together with the implications for Brazilian socio-economic standards of development regarding environmental issues. The chapter analyses how environmental education has grown in Brazil and points out its contradictions and challenges for the environmental education curriculum and pedagogical practice which are brought to light by the critical interpretation of environmental issues.

The link between environmental education and critical theory is traced in Chapter 3 and regarded as a possible way to encourage emancipatory environmental actions. The chapter gives the theoretical background to this thesis and introduces such important concepts with regard to environmental approaches as dialectics, praxis, alienation and ideology. The idea of ecological democracy and citizenship through a competent discourse which is set forth in Habermas' theory of communicative action lays down the guidelines of this study for an ecological rationale regarding the ethical principles of social justice. This chapter also incorporates a discussion about forming a new culture of argument for environmental education to stand up against the practices of indoctrination that are frequently propagated in schools. Hence, this thesis favours a libertarian pedagogical practice, on the lines of that supported by Paulo Freire's theory which is centred on the deconstruction of doctrinaire education perspectives.

Chapters 4 and 5 rest on the premise that teachers are not neutral subjects; rather they are agents of praxis who are able to bestow a new significance on environmental education which is effected by the introduction of sustainable and equitable uses of resources in society. As a result of this, the use of action research methodology has emerged as an instrument for creating a self-reflective setting for the training and enlightenment of the teachers. Chapter 4 justifies and conceptualises the process of critical action research by demonstrating the procedural aspects of data gathering. In addition, it introduces the main instruments for monitoring the action research during the study. The ethical agreements which have been drawn up by the participants are also examined in this chapter. Chapter 5 describes the action research development at selected schools. Although there is a structural proximity between both chapters, Chapter 5 is designed to provide a general description of the implementation of the action research process. This procedure will allow the reader to follow the main aspects of the enquiry from the pilot study to the main research.

Chapter 6 describes and analyses data concerning the way primary teachers in Ponta Grossa, Parana, Brazil understand environmental education, with regard to conceptions, curriculum and practice. It aims at answering the first research question of this thesis: *How do teachers understand environmental education in Brazilian primary schools?* Essentially, it results from data analysed from the first cycle of action research carried out by the teachers. This study identified distinct perceptions concerning primary teachers' comprehension ranging from restricted interpretations of environmental education to more critical social approaches. However, most of the participant teachers recognised that reductionist views (e.g. preservationist orientations) concerning nature and environmental issues prevailed in their understandings of environmental education. The predominance of limited interpretations displayed by most teachers was not a shock for the researcher. Rather, it accentuated the importance of promoting teachers' professional development and of introducing them to a different perspective of environmental education practice centred on the concrete problems students experienced in their local communities.

The participants' discussions with regard to the findings obtained in the introductory phase, was of crucial importance since it allowed them to review and plan the main strategies during the action research process. After the teachers' initial ideas had been identified, the action research was carried out in a way that was aimed at planning and taking

environmental actions which could be followed up by the teachers in the classrooms. Following this, chapter 7 describes and analyses the practical work carried out by the teachers. It addresses the second research question of this study: *What knowledge, skills and commitment do teachers display in the classroom when promoting environmental education for ecological citizenship?* It aims at analysing the way teachers assemble knowledge and draw on their skills to plan, implement and monitor activities required for bringing about environmental education for ecological citizenship. In essence, chapter 7 discusses the process of raising teachers' knowledge, skills and commitment to emancipatory environmental education. The findings from the development of this phase of action centred on the teachers who showed little engagement, those who showed partial engagement and those who showed major engagement.

Linked to Chapter 7, Chapter 8 evaluates the growth of emancipatory environmental education and its effects on ecological citizenship and the principles of social justice through the environmental actions developed by teachers in the schools. This chapter examines the evaluation process carried out by the participants concerning the practice of environmental actions. It is aimed at answering the third and fourth research questions of this study: a) *Did the teachers promote the growth of values of emancipatory action through environmental education?* b) *Did the teachers recognise that emancipatory environmental education provides a way of bringing about a kind of critical thinking on the part of the students which is based upon the principles of social justice and citizenship?* The chapter examines teachers' practices by moving from different levels of engagement to distinct understandings of emancipatory environmental education. Three different approaches emerged when the extent of the teachers' willingness to bring about an emancipatory practice through educational actions was carried out: teachers who arrived at the end of the process with a weak sense, teachers who have displayed a strengthened understanding and teachers who showed a fuller comprehension of emancipatory environmental education.

Allowing for the premise that action research is concerned with the idea of improving practice in any way, chapter 9 was particularly designed to answer the last research question of this study: *To what extent did the environmental education practice of the teachers change as a result of their professional development?* Indeed, in view of the fact

that most participating teachers were able to move from reductionist conceptions to more complex understandings of environmental problems, this chapter explores the findings of the research and its relationship to emancipatory environmental education, ecological citizenship and social justice. The chapter analyses the last cycle of action research concerned with the teachers' commitment to (re)plan environmental education activities for the next terms. In fact, chapter 9 endeavours to analyse the outcomes of the research as regards the extent of teachers' continued willingness to encourage an emancipatory environmental education. The results showed that teachers gained valuable insights from the development of the research through the construction of new understandings of environmental care for their students. In attempting to break away from the restrictive pedagogical practices they experienced before the research, most teachers embraced the idea that citizenship and social justice represented a remarkable alternative in enabling them to create an environmental education which was committed to the lives of the children and to environmental care.

As a conclusion, the last chapter of this study presents some discussion regarding the practice of environmental education and the role of teachers in today's society towards environmental care, sustainability and ecological citizenship. In addition, some limitations of the research are presented and analysed. Finally, this research presents some recommendations concerning the promotion of an emancipatory environmental education.



## **Chapter 2**

### **Environmental awareness and the growth of environmental education**

#### **2.1 Introduction**

This chapter discusses environmental awareness, the growth of environmental education and its relationship with sustainability and concepts of sustainable development. An attempt is made to explore the origins of environmental education by pointing out important aspects which have stood out in the course of its development. Together with this, the chapter examines the role of environmental education which was defined in important conferences from World Conservation Strategy to Agenda 21 and Johannesburg Summit. The chapter concludes by investigating some particular characteristics of the educational context in Brazil by focusing on environmental education and its prospects.

#### **2.2 Origins of environmental education**

The magnitude of the environmental problems around the world and the consequent impacts on ecological systems has increased the need for a new relationship between human beings and nature. The meeting of these two – humans and nature – which had been relatively ignored in previous decades, began to emerge in the early 1970s. This occurred not by sheer chance, but as a result of many factors. The major factor concerns the process of destruction of nature as a result of human actions, but it is also the case that the concept of the environment was changing rapidly. Frequent ecological catastrophes, for instance the deforestation of the Amazon Forest, the French nuclear tests in the Pacific and so on, have attracted international attention. What seemed originally only to be a preoccupation of some ecologists has now become a general concern and has entered everyday global discourse.

New strategies for consistent education in relation to the environment have become the concern of environmentalists, teachers and other specialists. Environmental education has often become a key instrument for the task of improving the environmental condition of the planet. However, there may be grounds for a serious misinterpretation – environmental education is not a recent phenomenon as some specialists think, but has its origins in the nineteenth century. Palmer (1998) shows that some authors such as Sterling (1992) attribute the use of the term environmental education to Sir Patrick Geddes (1854-1933) a Scottish

Professor of Botany. It was Geddes who made the first connection between quality of environment and quality of education. He outlined the notion of the natural world in an urban place during the Victorian era. After this, in 1902 the School Nature Study Union was created, which in 1940 was transformed into a centre for rural studies. This marks the point from which environmental issues became an important subject for discussion in general and for education in particular.

In 1949 in the United Kingdom, the Nature Conservancy was created, which was essential to the development of environmental education. But it was only in 1965 at Keele University (Staffordshire, UK), that an educational conference was held, with a proposal to study the conservation of the countryside. Afterwards, in 1968, the Council for Environmental Education was founded. However, interest in environmental education was not restricted to the UK. Indeed, in 1948 in Paris, Thomas Pitchard founded the first International Union for the Conservation and Natural Resources (IUCN). However, the origins of the term 'environmental education' have been contested, with Wheeler (cited in Palmer, 1998), for instance, arguing that the term environmental education first appeared in the book *Communita* written by Paul and Percival Goodman in 1947.

### **2.3 The growth of environmental education: conferences, meetings and summits**

Despite its controversial origins, it is clear that some important events surrounding environmental education took place in the 1960s, which made a large contribution towards the legitimacy of environmental education. For instance, in 1965 a meeting of the Education Commission's North-West Europe Committee was organised by IUCN, which set out a proposal for environmental education to be discussed in schools and in higher education. Three years later the United Nations Educational Scientific and Cultural Organisation (UNESCO) held a conference in Paris about the biosphere. In the same year, UNESCO also called attention to the need to implement curriculum issues in schools to look at environmental issues and raise awareness. In 1970 in Nevada, USA, the International Working Meeting on Environmental Education in the School Curriculum was set up by UNESCO. During this event, environmental education was defined as follows:

Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-

relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. (IUCN cited in Palmer, 1998:7)

Environmental education made significant advances following the United Nations Conference on the Human Environment, which took place in 1972 in Stockholm, Sweden. The result was the establishment of the United Nations Environmental Programme (UNEP) in 1975. Both UNEP and UNESCO created the International Environmental Education Programme (IEEP) and organised the first Inter-Governmental Declaration in relation to environmental education.

In addition, an important step in relation to environmental education was the Inter-Governmental Conference on Environmental Education organised in Tbilisi, Georgia, USSR in 1977. The outcome of the Tbilisi Conference was to identify some goals for environmental education. Firstly, it served to call attention to a clear awareness of the social, economic, political and ecological aspects of the inter-dependence between urban and rural areas. Secondly, it was agreed that each human being must have the opportunity to acquire values, attitudes and skills in order to protect and improve the environment. Thirdly, Tbilisi called for new patterns of behaviour for individuals, groups and society in relation to the environment (UNESCO, 1977). Tbilisi was an important international reference for the development of environmental education. In Brazil, (as will be discussed in Section 2.6) the Tbilisi Conference brought new perspectives to environmental understanding.

During the 1980s, the efforts made by international agencies to motivate environmental education received significant support through the publication of the World Conservation Strategy (IUCN, 1980). The idea was to create new attitudes which arose from a new ethic regarding the conservation of natural resources. The essence of this document was the conception of inter-dependence between environmental conservation and development. Thus, environmental education should aim to foster a new type of behaviour to improve the environmental conditions of each country.

Similarly, the role of environmental education was intensified by an important document called 'Our Common Future' and also known as the 'Brundtland Report' (WCED, 1987). In this document education was considered explicitly as an agent which is able to change behaviour and attitudes towards sustainable development:

We call for a common endeavour and for new norms of behaviour at all levels and in the interests of all. The changes in attitudes, in social values, and in aspirations that the report urges will depend on vast campaigns of education, debate and public participation. (WCED, 1987: xiv)

The premise was to bring about changes, which could alter human attitudes. During the 1980s, efforts to foster ecological awareness received a new boost; for example, in 1987 UNESCO and UNEP organised the Tbilisi Plus Ten. This event declared that there was a need to create ecological consciousness through appropriate environmental education. A further indication of the growing prominence of environmental concerns was the European Year of Environment (1987/1988) which was set up by the European Community. This event was largely devoted to the rational and prudent use of natural resources and the protection of the environment. Environmental education, it was argued, should be responsible for encouraging environmental protection.

Hence, the environment education was strengthened in the next few years. The 1990s were of crucial importance in creating an environmental conceptual background which could be applied to the educational context. As an example of this, in 1992 the Conference on Environment and Development – Earth Summit and the Global Forum (UNCED, 1992) organised in Rio de Janeiro, Brazil brought new elements about environmental education to the fore through Agenda 21(UNCED, 1992). The principal purpose of this document was to discuss alternatives to find solutions to global environmental problems through sustainable development. Chapter 36 – Promoting Education, Public Awareness and Training referred to the need to implement environmental education:

Governments should strive to update or prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels within the next three years. (UNCED, Agenda 21, Chapter 36, 1992:221)

Two key points arising from this idea need to be looked at closely. Firstly, the relationship between education, environment and development features as a central characteristic of the Rio proposal. The link which connects these three elements shows that there is measure of inter-dependence between these concepts. For example, it is argued that teaching and learning in environmental education should be conducted within the parameters of a perspective of sustainability. In addition, it is interesting to observe the supposed time (3 years) which is required to integrate the environment and development as a cross-curricular theme at all levels. This means that environmental education became in a short time a vehicle to carry the strategy of sustainable development forward. As a result of this, the perspective of sustainability has become the new model of environmental education. As a new 'ideology', it has become a support for educators and other specialists to foster an ecological awareness associated with sustainability and ideas of sustainable development. It is important to note that the notion of sustainable development connected with environmental education agenda was strongly reinforced in the second Earth Summit in Johannesburg, South Africa (WSSD, 2002). Indeed, from World Conservation Strategy (IUCN, 1980) to Johannesburg Conference (WSSD, 2002) the idea of development and sustainability emerged as a key element to be achieved through environmental education. The following section goes on to review some of the principal points about sustainability, sustainable development and the environment and the implications for environmental education.

#### **2.4 Sustainability and sustainable development: from World Conservation Strategy to Johannesburg Summit**

The idea of sustainability has been represented in various ways. It has been common, for example, to relate the word sustainability to themes of social and political interest such as 'sustainable development', 'sustainable agriculture', 'sustainable economy', 'sustainable ecology' and so on. The link between education and sustainability has introduced a new dimension to environmental education. In fact, a miscellany of ideas has emerged from an international discourse about global capitalism, which has suggested that not all types of development would be damaging to the environment. The intellectual project of sustainability embodies complex conceptions, conditions and characteristics.

In fact, the notion of sustainable development first appeared in 1980 in the Forum World Conservation Strategy (IUCN, 1980) set up by the International Union for the Conservation of Nature and Natural Resources-(IUCN, 1990). For the IUNC global changes have been bringing about catastrophic results, such as overpopulation, increase of poverty and environmental problems, such as the atmospheric accumulation of carbon dioxide. To avoid a global disaster, some alternative strategies were put in place to solve the consequences of contemporary industrial society. In other words, the notion of sustainable development has comprised attempts to combine environmental and developmental perspectives with the aim of putting into the global agenda the urgent need to change the social and ecological conditions of the world's population.

The classical concept of sustainable development argues for a use of available resources which does not compromise the needs of future generations and emphasises the permanent need to preserve ecological systems. The document World Conservation Strategy (IUCN, 1980) sets out three priorities which it argues must be incorporated into development programmes: 1) the maintenance of ecological processes 2) the sustainable use of natural resources and 3) the preservation of genetic diversity, including the conservation of wild species.

The idea of sustainable development was raised, in 1983 when an independent commission of the United Nations suggested new strategies for environmental and economic development through the document Our Common Future (1987). The commission, known as WCED (World Commission on Environment and Development) was made up of members from Europe (6), Africa (5), Asia (5), North America (3) and South America (3). The concept of sustainable development was defined in much the same way as it had been defined in the document World Conservation Strategy (IUCN, 1980):

Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. (WCED, 1987:8)

The document Our Common Future (WCED, 1987) stresses the point that the execution of sustainable development should be carried out without limits and restrictions. In other words, it is an urgent necessity. Technology and social organisation should be managed

and improved so that this can lead to the growth of a new era of sustainable economic growth. World poverty was considered as being a global and social problem. In these circumstances, poverty could be a determinant of ecological devastation and other catastrophes. In the light of this set of criteria, sustainable development was considered as an alternative to facing social and ecological problems. The emphasis on the sustainability project envisages a new type of controlled development. The main goal is to set up strategies for development without damaging ecological systems. The conceptual background of sustainable development has embraced general challenges with a view to change the condition of life on the planet.

Likewise, an important reference to sustainable development and sustainability took place in 1991 with the publication of the document 'Caring for the Earth: a Strategy for Sustainable Living' – a new version of World Conservation Strategy- published by IUCN, UNEP and WWF (World Wildlife Fund). The document is divided into three parts. The first refers to the principles of sustainable living, the second covers the main components of the biosphere and human activity on the planet while the third imposes some targets which involve practices and changes of behaviour in every country. 'Caring for the Earth' (IUCN/UNEP/WWF, 1991) argues that there is a need to change behaviour and values, and that this must be attached to a new ethic to provide a link between conservation and development and, as a result, planning economic growth without harming the environmental conditions of the planet.

These ideas were complemented in 1992 in Brazil – Rio de Janeiro – at the Conference on Environment and Development – the so-called Earth Summit and Global Forum (UNCED, 1992) about environmental conditions. The conference formulated five documents:

1. The Rio Declaration of Environment and Development
2. Agenda 21
3. A Statement of Principles
4. The United Nations Framework Convention on Climate Change
5. The Convention on Biological Diversity.

The Rio Declaration (UNCED, 1992) set out twenty-seven principles in relation to the promotion of sustainable development. The document made an appeal to the world, declaring that:

- Human beings are at the centre of concerns for sustainable development
- States have a responsibility to ensure that activities carried out under their jurisdiction do not cause damage to the environment
- Poverty should be eradicated
- Everybody is responsible for the achievement of sustainable development and a higher quality of life for the people
- The environment and natural resources of populations under oppression, domination and occupation must be protected. (UNCED, 1992)

Agenda 21 (UNCED, 1992) is, undoubtedly, the most complete document to date in respect of ordering international co-operation about the environment. Nonetheless, the idea of sustainability and sustainable development has been subject to severe critical debate. Some specific objections to sustainability have been pointed out by some specialists. Indeed, some authors argue that the concept of sustainability arises from ideas based on a linear perspective of progress, where development is equated with economic growth and expansion of the market, and modernity, with consumerism. For instance, Court (cited in Palmer, 1998) argues that sustainability represents forces aimed at promoting capitalism and follows a particular type of political development which ignores the diversity of perspectives within each country. In addition, the political conception of sustainability tends to heighten the divisions between countries which are considered as industrialised and those seen still to be in a process of development.

Some controversies have arisen from conceptions defined in Rio de Janeiro. Some authors such as Pepper (1996), Myerson and Ryden (1996), Sterling (1996) and Huckle (2001) have analysed the proposals from Agenda 21. As Pepper (1996) pointed out, the model of development imposed by industrialised countries does not take into account the specific realities of each country. Moreover, the discourse on the eradication of poverty, the creation of a higher quality of life and responsibility in relation to environment is purely rhetorical. See the following statement:



First, it is not 'poverty', defined as absence of American way of life, which is the root cause of environmental degradation, it is American-style 'wealth'. Second, 'overpopulation' is *caused*, not cured, by modernisation, destroying the traditional balance between people and their environment. Third, the 'open international economic system' of the Declaration will extinguish cultural and ecological diversity. Fourth, the problem of externalisation of pollution, etc., is not solvable by pricing the environment, but by reversing enclosure of the commons, so there is nowhere to 'externalise' to. Fifth, Rio's calls for more 'global management' effectively constitute Western cultural imperialism. This approach would anyway be ineffective because of the impossibility of verifying and enforcing global agreements (Greene, 1993). Sixth, the attitude that transfers of Western technology to the Third World are the most urgent need smacks of traditional Western scientific imperialist arrogance – effectively presuming that ignorance and laziness characterise Third World people. (Pepper, 1996:105)

Pepper (1996) argues that issues such as poverty, marginality, and environmental degradation are directly linked to political power and the dependency of underdeveloped countries on rich countries. Similarly, Myerson and Rydin (1996) have analysed sustainability and concepts of sustainable development as a rhetorical approach towards cultural innovation. In other words, sustainability and sustainable development represent new ideas and a new cultural perspective to face changes. The authors go further and compare these ideas to a 'new religion', which enshrines a new model of behaviour. The change of attitudes in society which are associated with a cultural innovation underpins the basic idea of this interpretation of development.

Similarly, Huckle (2001) argues that sustainability is not a simple concept. It has an ideological and political basis, which is structured by different kinds of knowledge and values. His valuable analysis lays emphasis on the deep differences that lie between the sustainable and unsustainable worlds. In fact, most people around the world live in an unsustainable world and suffer extreme privation. Not surprisingly, Huckle (2001) argues that:

The root causes of unsustainable development lie in the way the world's economic, political and cultural systems are governed. People are not free and equal in determining the conditions of their own existence and therefore cannot realise their common interest in sustainable forms of development. (Huckle, 2001:145)

The consequences of living in an unsustainable world are grounded in the lack of social justice and the widespread existence of inequity. Indeed, the concept of sustainability does not only have a connection with ideological factors or environmental issues, but particularly with the difficulties people face in getting the material conditions needed for life. As Huckle (2001) rightly points out, people around the world:

... are living in ways that are ecologically, economically, socially, culturally and personally unsustainable. They urgently need an accountable, equitable and environmentally sustainable system of global governance and citizenship... (Huckle, 2001:144)

Huckle (2001), argues that citizenship and democracy are essential requirements for making improvements in people's quality of life. It is particularly necessary to see citizenship as being connected with social justice and thereby forming an essential pillar to uphold a real and concrete democracy. Thus, sustainability and sustainable development must be grounded on an intellectual and ideological project which seeks an equitable world. It must focus on concrete and real action towards citizenship.

Sterling (1996), on the other hand, refers to sustainability as a social process that is linked to the ecological spheres. Sustainability and sustainable development appear as processes in which are in transition while being connected with social, ecological, ethical and economic dimensions. Sterling (1996) also refers to the fact that achieving sustainability entails new ways of knowing and of being, which are implicated in changes of attitudes and behaviour. These changes can be interpreted as a new ways of thinking, which poses tough challenges in relation to social development. As a result of this, Sterling (1996) suggests that education in general and environmental education in particular should involve critical and creative learning to bring about changes.

In the educational arena, the enlargement of the debate around sustainable development was given an impetus through the establishment of important summits after Rio Declaration (UNCED, 1992). The idea of human development found in the Millennium Development Goals 2000 (UNDP, 1999) and in the Conference on Financing for Development (United Nations, 2002) was a prelude to the World Summit Sustainable Development (WSSD,

2002) held in Johannesburg, South Africa in August-September 2002. As in the case of Agenda 21, this document highlighted education as a key factor in achieving sustainability.

The principles laid down in the Johannesburg Summit (WSSD, 2002) built on the legacy of Agenda 21 with regard to the global environmental agenda. Indeed, the conference restated the need for international commitment and cooperation for sustainable development. Environmental concerns regarding access to basic needs (e.g. clean water, sanitation, health care, protection of biodiversity) led to the adoption of positive measures for eliminating global disparities. It must be reiterated that the construction of a sustainable and democratic world is an indispensable component for the future of humanity. For this reason, education for sustainable development is endorsed by the document because it is conceived as an important element to eliminate underdevelopment and eradicate poverty. The main idea is the creation of behavioural patterns concerned with changing consumption and protecting and managing natural resources. In this context, the common goal of sustainable development embraced the idea of encouraging an education which centred on children, as instruments of behavioural change (WSSD, 2002).

Although some valuable statements came out of the Johannesburg Summit (WSSD, 2002) regarding what the vital requirements are for attaining sustainability, a few doubts were expressed about what was effectively achieved by the setting up of Agenda 21 (UNCED, 1992). Indeed, following the Rio Declaration (UNCED, 1992), as identified by Najam (2002), the implementation of actions towards sustainable development has been unimpressive. A survey carried out by Najam (2002) with 252 experts (from governments, NGOs, the academic world, business and media) of global environmental policy from 71 countries reached the conclusion that:

There is no doubt that Rio acted as a lightning rod and that there was a great deal of international activity following the conference. But if the measure is whether the environment has improved or whether we are closer to dealing with the fundamentals of sustainable development ... there has been little progress. (Najam, 2002:1)

It is worth mentioning that Najam's (2002) research found that 34% of the respondent participants point to education and awareness as likely areas where progress can be achieved at Johannesburg. As well as this, 32% of the experts pointed out that education

would be the most important element in the future of sustainable development. In the opinion of these respondents, more can be expected from an education to do with sustainability than issues concerning civil society participation or consumption and production.

Despite the international awareness of the need to bring about more equitable society and less environmental degradation, a persistent problem permeates the question of how to achieve sustainable development: i.e. to translate debate into practical action. Clark, Kates, McGowan and O'Riordam (2002) make the following observation:

With the Johannesburg Summit, sustainability needs to grow up, turning from an arena for debate into an agenda for action. The question worth asking is, who lead the way? (Clark, Kates, McGowan and O'Riordam (2002:1)

Perhaps, another intriguing question could be added to the authors' concern: What is the most satisfactory way to face the challenge of sustainability? Considering the role of environmental education in this regard, answers to both questions must lie in the revision of educational and ecological theory. In practical terms, this means that it is not enough for the teaching of education or environmental education to centre on a distorted focal point. By this is meant, it is not enough advocate a technical education which is based on the inculcation of behavioural patterns. This point is explored by Kahn (2002):

Examining the burgeoning movement of Environmental Education over the last thirty years, we can trace both its positive and negative pedagogical effects – the ways in which it if furthered progressive causes and the manner in which become co-opted by establishment powers, was technocratic, and altogether too marginal. Tomorrow's sustainable society ...will require a pedagogical revolution equal to its present socio-economic counterpart. (Kahn, 2004:4)

Similarly the kind of environmental learning that is required should seek to recognise people's potential. In this context, a participatory environmental education which is oriented by emancipatory actions can be an answer towards the conquest of sustainability and social transformation. However, avoiding the rhetoric of sustainable development to action is not an easy task. In fact, although the question of how to bring about a sustainable world has been treated with some urgency, ecological problems have increased more and

more. In Brazil, as in many other countries, alternatives to promote a more equitable and sustainable society have achieved little. The next section will explore the relationship between sustainability and environmental education by looking at the complex issue of development and the environment in Brazil.

## **2.5 Development and the environment in Brazil**

As was reviewed in the preceding section, the idea of a sustainable world must be viewed in the light of its opposite, that is, the unsustainable world. In the view of Huckle (2001:144), the lack of decent and appropriate conditions of life for many people is the result of unequal and unsustainable development. Similarly, Palmer (1998:83) describes sustainable development as “a political minefield” (1998:83) where the rhetoric of sustainability has not prevented the gap between Third World - ‘poor’- and Western - ‘rich’. It is not useful to separate discussions of environmental problems from analyses of poverty and marginality. The contemporary problems in relation to sustainable development in poor countries have deep roots, which are related to inequality, social injustice and economic dependence. The social differences between the less economically developed countries (the majority of the world) and the more economically developed world (the minority) are huge.

During the past decade, many developing countries paid out more in debt repayments to developed nations than the total amount they received from exports and development assistance. These developing nations had to reduce imports, investments and consumption, and they were less able to fight poverty at home. In some cases, the financial drain resulted in cuts in health care, education and environmental protection. (Palmer, 1998: 54)

In Latin America, the growth of foreign debt has led to catastrophic consequences and an economic dependence on the First World. In Brazil, the everyday living conditions of a large part of the population are economically extremely inadequate. Brazilian poverty has deep roots and stems from economic exploitation and capitalist development which are prevalent in Brazil. In other words, the causes of this economic exploitation are historical and political and can be connected to the model of development introduced in Brazil.

Brandenburg (1999) argues that the model of development adopted in Brazil was grounded on an agrarian model of exploitation imposed by European processes of colonisation. The

land and natural resources were always used without any consideration for the future. The motive of the colonisation process was to make fortunes. Over a long period of time, farmers deforested, planted indiscriminately and used up the soil without any notion of preserving the natural resources. The implementation of this model lasted a long time and continued up to the decline of coffee production in the first decades of the 1900s. Coffee occupied fertile areas especially in the South of Brazil, and caused the degradation of the soil through a process of monoculture, itself another imposition of colonialism.

Following this, a new form of development, which gave priority to the industrialisation process, supplanted the agrarian model of development in Brazil. This new pattern was “imposed” by the international economy with an emphasis on a Western model of development. Furtado (1970) maintains that the First World War led to significant consequences, particularly to underdeveloped countries. First, this period was marked by the emergence of the international division of labour, which allowed a concentration of activities in certain areas of production through technological processes. Second, the setting up of industrial centres based on technological progress created a rapid accumulation of capital. In other words, this model of development guaranteed uneven growth and favoured some areas in opposition to others – a typical outcome of capitalist development. Development was partial and segregated and can be considered to have failed to respect the social and cultural diversity of the country (Kowarick, 1975).

By the beginning of the 1930s, Brazil had embarked on a process of industrial expansion while the government actively favoured initiatives to increase economic development. For example, during the Second World War, the Brazilian government created its modern steel industry. According to Furtado (1970):

The Brazilian government’s Steel Plan was framed just before the outbreak of the war. The steelworks at Volta Redonda [Rio de Janeiro] were constructed during the war years with funds provided by the Export-Import Bank and equipment bought in the United States; this was possible only because of the political understanding between the Vargas Administration and President Roosevelt. The plant came into operation in 1946. (Furtado, 1970:174)

In 1952, the Banco Nacional de Desenvolvimento Economico (National Bank for Economic Development) was founded. Its function was to allocate resources to basic

industries with the aim of increasing economic growth. Over the years, the consequences of disorganised economic growth began to be felt. For instance, there was an aggravation of social tension and the spiralling inflation caused serious repercussions. As a result, the country faced a series of crises. The Brazilian economy suffered a period of progressive decline and the political forces of the opposition, supported by social movements with socialist patterns, were strengthened. However, this was crushed by a dictatorial intervention, which occurred in 1964 and lasted until 1985 (Wanderley, 1997). During the dictatorial regime, the model of development adopted, again gave priority to economic growth but with specific features. Indeed, Furtado believes that:

After 1968 there was a substantial change in the strategy of the Brazilian government: protection to industry was reduced in order to facilitate income concentration by excluding the financially or economically weaker groups and resources were mobilised to broaden demand in sectors with an under-utilised capacity, that is sectors producing for the restrict market made up of the high-income minority. In these circumstances, acceleration of the growth rate necessarily entailed a high concentration of income and consumption. (Furtado, 1970:178)

As a result of the reduction of protection given to industries, the Brazilian market experienced visible economic stagnation. This process created a large division in the productive sectors in Brazil. On the one hand, a modern and advanced economic system appeared; on the other, a backward system was tolerated. This intensified the social problems of the Brazilian people, and led for instance to unemployment, rural migration, overpopulation in the large centres, poverty and marginalisation.

Thus, in a short time, the economic structure of the country underwent significant changes. In a few decades, its production base, which had been totally agrarian, was transformed into an industrialised system based on a dominant Western model of development which applied European and North-American standards. The 1970s and 1980s were crucial to the economic and social 'revolution', which occurred in Brazil and had serious implications for the environment. The so-called superiority of the industrialisation process transformed the Brazilian landscape. The rural exodus brought an enormous contingent of people to work in large cities such as Sao Paulo. Another example, which is cited by Ferreira (1987), occurred in Parana State in the South of Brazil, where from the 1970s onwards there was an intensive process of industrialization which supplanted the agricultural sector. In a short

period of time the south of Brazil was transformed into a region of industrialisation. During the last three decades, these developments have resulted in the dislocation of people to the large centres, which do not have a suitable infrastructure to cope with these people. As a result, most of the people who have migrated to urban centres have ended up living in very poor conditions, and this has led to rapid environmental degradation. The poverty, which people have been conditioned to, has been so severe that they live without even the minimum of social resources. This is the reality of Brazil, notwithstanding the spectacular wealth of the few.

It is also worth noting that in rich countries too, environmental conditions have deteriorated. Industrialised countries have contributed significantly to environmental degradation. The consequences of modernity have therefore been catastrophic, albeit masked by a superficial material well being experienced by an influential minority. As a result of this, the notion of sustainable development and the sustainability movements arose in the 1990s as a strategy for a new type of development. In short, the conception of development has centred on the idea of sustainable development as a reaction to bring about a different world.

Jordan and O'Riordan (1999) argue that sustainability and sustainable development must represent processes which comprehend and accept that there are environmental limits. They argue that sustainable development is a pattern, which imposes some economic constraints on the environment. In other words, environmental limits mean that production must be carried out in accordance with some parameters, which involve environmental protection to ensure the continuity of ecological systems and also better conditions of life in the planet. Development must be "just and fair" (Jordan and O'Riordan (1999:139). That sustainable development is not carrying out its task is plain to see because "the post-Rio process is so lamentably failing" (Jordan and O'Riordan (1999:139). It clearly follows from this that to bring about a sustainable world, it is necessary to create appropriate social conditions which are grounded in social justice and the principles of citizenship. Furthermore, according to Jordan and O'Riordan (1999):

Sustainable development involves connecting technological inventiveness with social justice and ecological stewardship (Jordan and O'Riordan, 1999:140)



In conclusion, it seems appropriate at this point to emphasise once again that in Brazil the way in which social and economic development has been carried out has resulted in serious adverse consequences for this country and its people. These consequences have been felt in the social and economic spheres and also had an effect on ecological circumstances. The notion of sustainability and sustainable development, which offered an alternative way of effecting changes in the world, is failing. The dire social conditions of the people have shown that the initiatives taken to improve their standard of living seem to have achieved little. In the period from the Rio Declaration (UNCED, 1992) to Johannesburg Summit (WSSD, 2002) little had been achieved to form a real sustainable society. As Najam (2002:8) says, it seems that when analysing the “overall picture 10 years later, Rio’s idealism is still apparent” (Najam, 2002: 8).

As has been shown in this chapter, sustainability and development are controversial and contested terms and both have economic, political and social implications. Furthermore, social and environmental problems such as poverty and ecological depredation have major consequences and are directly related to political dependence on the international community. Thus, sustainability should be understood through a critical approach in intellectual and practical terms, as a counter-hegemonic discourse. This means that sustainability must be seen as a process where people are able to participate in the social and political construction of their environment. In this way, environmental education plays a fundamental role and must go beyond idealised forms of imposing behaviour and attitudes on others; rather it should incorporate a critical social understanding of environmental problems. This is what some authors such as Fien (1993) and Huckle (1998) regard as ‘education *for* the environment’ and what Khan (2004) defines as ‘ecopedagogy’. In addition, this is what this thesis endorses as being ‘emancipatory environmental education’. Thus, the role of environmental education in Brazil towards a new environmental ethic is particularly important. It will be investigated in the next section.

## **2.6 Environmental education in Brazil**

It has to be admitted that initiatives to promote effective action in relation to ecological awareness are still a long way from being considered significant by many people in Brazil. In another sense, the last few decades have been very important in opening up environmental education in Brazil. In particular, the recent inclusion of this topic as a cross-

curriculum subject in the National Parameters for the Curriculum (NPC, 1997) can be considered an important step in promoting the growth of environmental education and raising ecological consciousness. However, such a step may, on its own, achieve little, not only in Brazil but also in other countries.

From the 1980s onwards, Brazil has achieved a good deal in relation to environmental education and the protection of the environment. Of course, international tragedies such as the Chernobyl disaster (1986) and environmental threats such as global warming have contributed much to raising awareness of actions to do with environmental protection. In addition, national environmental catastrophes have also led to new forms of ecological protection in Brazil. For instance, in 1988 in Xapuri, in the state of Acre in the North of Brazil, there was the notorious murder of Chico Mendes. Mendes was a 'seringueiro' (rubber tapper) and had led a movement against the destruction of the Amazon Forest. His efforts were devoted to extracting sustainable reserves of rubber by using the natural resources of the Amazon Forest without destroying the forest. The impact of his death put the international spotlight on deforestation issues in the Amazon Forest (CSN, 2000). After his death, Xapuri became a nature reserve protected by law. One year before this, a radioactive accident occurred, when several people were contaminated with Caesium-137 from a radiological machine abandoned in Goiania, State of Goias in the Centre of Brazil (MEC, 2000). These are just some of the events that have brought serious concerns about the environment into the public consciousness.

At around the same time, international reports such as 'Our Common Future' (WCED, 1987) had enormous influence on introducing new approaches to environmental themes. The idea that material poverty causes environmental degradation was highlighted by different specialists and a new model of development – sustainable development – was designed to bring about better conditions of life on the Earth. The ideas about sustainability were introduced when Brazil was discussing its new general laws – enshrined in the Brazilian Federal Constitution. This document was enacted in 1988 and contained a whole chapter dedicated to environmental protection and nature. Braun (1992) argues that, although the Brazilian Federal Constitution has declared the environment to be an issue of vital importance, initiatives regarding the growth of environmental protection have been unsatisfactory. Braun (1992) argues that:

The promulgation of the new Constitution ... brought into effect some of the world's most advanced environmental protection legislation. However, in face of economic difficulties and multiple political and institutional changes effective enforcement of environmental regulations is not yet satisfactory. (Braun, 1992: iii)

In fact, Article 225 of the Brazilian Federal Constitution stipulates the need to protect the environment, insofar as it affects the quality of life, for present and future generations. In this context, environmental education has been characterised as an urgent requirement, which should be "promoted at all levels of education" (Article, 225, Paragraph VI). This law mandated promotion of "public awareness in order to preserve the environment" (Article 225, Paragraph VI). However, the fact that a large part of the Brazilian population live on a subsistence level with a scarcity of basic commodities has shown that there is a wide gulf between what has been established through law and the way real people live. Despite this, this document is noteworthy because it defends the need for real conscientiousness in relation to the environment and it prioritises environmental education as a necessity.

Nonetheless, environmental education concerns in Brazil are not restricted to clauses in the Brazilian Federal Constitution. Although environmental education is quite recent, some important documents have made an impact on this topic in the Brazilian educational system. For instance, the Tbilisi Conference (UNESCO, 1977) has been considered by some Brazilian specialists such as Layrargues (2000) as an important step. In relation to environmental education in Brazil this author points out that it was particularly significant in explaining how the environment is linked with social, political and economic elements. This is borne out by the following comments:

This interpretation breaks radically with the fixed viewpoint of many Brazilian educators who still believe that environmental degradation is due, amongst other factors, to the demographic explosion and growing urbanization and industrialization, as if such phenomena were dissociated from the predominant world-vision of the society in which they originated. (Layrargues, 2000:167)

In a similar vein, Aguilar (1992) argues that the Tbilisi Conference had a large impact on the conceptual background of the environment and society. The author argues that the document enabled environmental education to break with some aspects of the predominant

ecological reductionism which can be found in scientific analysis of society and nature, which only prioritised education when it was concerned with the preservation of nature. Even though environmental education in Brazil in this period still did not have a significantly structured framework, the Tbilisi statements brought about a new relationship between environmental issues and education (Aguilar cited in Layrargues, 2000).

An important event occurred in 1981, when the Brazilian Federal Law 6902/81 was enacted. This law made environmental education in schools compulsory. In the same year, another law (Federal Law 6.938/81) defended the idea that environmental education should be an important instrument for encouraging activities aimed at the improvement of environmental conditions throughout the country. This law introduced the expression National Policy on Environment (NPE, 1981). This document was essential to the development of environmental education in Brazil, not least because it brought together several controversies (MEC, 2001). On the one hand, there were specialists such as teachers and ecologists who wished to transform environmental education into an effective and distinct discipline in the curriculum. From a different perspective, another group of specialists defended the idea that environmental education could not become a formal 'subject' or discipline. This idea envisages environmental education as being related to social values, and because of this, it must be able to foster attitudes and behaviour, which are not part of the content of the formal curriculum (MEC, 2001).

In 1985 SEMA – Secretaria de Estado e Meio Ambiente (State Department of Environment) – analysed the development of environmental education in Brazil (MEC, 2001). The results (perhaps unsurprisingly) showed that there was a lack of interest in this subject in schools. It was also observed that there was no consistent strategy in setting up initiatives for the development of environmental education. SEMA's work has therefore led to recognition that there are serious limitations in the way environmental education is conducted in schools. The explanation given by SEMA for the lack of interest within schools in setting up initiatives to heighten environmental awareness was based on the idea that environmental matters were not considered to be an important priority among teachers and students. Subsequently, in 1986, SEMA organised the Seminar University and Environment in Brasilia. This event focused the debate on environmental issues in higher education. It was observed (again unsurprisingly) that at a university level, environmental

education only featured in disciplines related to the Biological Sciences and Engineering. This failure to implement environmental issues showed that the universities had an inadequate concept of environmental education.

A subsequent and important event introduced new guidelines for dealing with the environment and education. In 1987 Federal Law 226/87 was enacted by the Federal Council of Education, which stressed that environmental education in Brazil was an essential need. In addition it argued for the urgent inclusion of environmental education at all school levels. As a result of these actions, in 1988 the Federal Constitution approved the inclusion of environmental education at all levels, but without considering it as a formal, separate discipline (MEC, 2001).

By the 1990s environmental education in Brazil had made some important steps forward. In 1992, Brazil hosted the Conference on the Environment and Development – the Earth Summit and Global Forum organised in Rio de Janeiro. This event provided a new stimulus and sense of direction to environmental education through Agenda 21 (UNCED, 1992). Agenda 21 drew up new guidelines for dealing with Brazilian environmental education. The perspectives of sustainability and sustainable development announced in this document suggested some strategies for the preservation of ecological systems and the environment. In this scenario, environmental education played an important role towards improving environmental conditions (UNCED, 1992).

Since Agenda 21, the idea of environmental education in Brazil has received a new boost. Sorrentino (cited in MEC, 2001) maintains that environmental issues and environmental education have been addressed to human rights and ideas of citizenship, which were influenced by the democratisation process that prevailed in Brazil after the dictatorial period. Universities, institutions of research, schools, NGOs (Non – Governmental Organisations) and so on received an enormous boost in bringing about the growth of a wider ecological awareness.

The disappointment with a number of political ideologies which were tried out before and during the 1980s, and the attendant problems of political corruption, inflation, poverty and social marginalisation, resulted in a new way of interpreting social and ethical problems in

Brazil. In other words, material deprivation and the need for sustainable development emerged as major social concerns. This was coupled with a growing recognition that environmental problems cannot be understood without reference to political, social and economic dimensions. In view of this, there was a growth in the number of ecological NGOs and several institutions showed concerns about environmental problems (Gohn, 1995). Some of these NGOs had a commitment to expanding environmental education. As a result, environmental education grew significantly, following activities arising from initiatives by NGOs, private and state-owned companies, universities and schools.

The first National Conference on Environmental Education held in 1997 was an important event organised in Brazil. The outcome of this meeting was the document called Declaration of Brasilia on Environmental Education (1997). This report appealed to governmental authorities and civil society about the urgent need to implement significant actions in relation to environmental education. In this same year, the document National Parameters for the Curriculum (NPC) was published. In this way, environmental education was incorporated into the curriculum as a cross-curriculum subject for schools. In 1999, Federal Law 9.795/99, which officially created the National Policy of Environmental Education (NPÉE, 1999), was enacted. By the year 2000, environment concerns had been incorporated at a formal level within schools in Brazil. Layrargues (2000) maintained that this initiative represented for environmental education with regard to:

(its)...incorporation into the educative process as a whole in all subject areas in an interdisciplinary manner taking the local environment context as a starting-point. (Layrargues, 2000:168)

At a level of discourse, the environment in Brazil has been conceived as an emergent and problematic arena. The National Parameters for the Curriculum (NPC, 1997) considers that environmental education has been an essential element in transforming environmental awareness. This involves more responsibilities for the teachers and students. In other words, from this perspective, learning and teaching must be related to sustainable principles concerning the environment and society. In Chapter 7 some aspects of Brazilian curriculum connected with teachers' practices of environmental education during the action research will be presented.

No doubt, in the light of the recent story of environmental education in Brazil, the inclusion of this topic as a cross-curriculum subject represents an important step. On the other hand, it can be observed that, given the current environmental conditions in Brazil (and the world) and the absence of even the most basic conditions of life for many people, the measures taken to encourage sustainable actions have achieved little to date. In essence, these are the initiatives which have been put into effect in environmental education in Brazil. To sum up, it should be pointed out that pedagogical concerns in relation to environmental education in Brazil must take into account that the integration of social justice in the practices of teachers is a fundamental prerequisite for them to go beyond discourse to action.

Efforts to promote environmental education have become a challenge for teachers and educational specialists in general. The fact that environmental education has been included in the curriculum is welcome. However, there are some aspects which must still be discussed, such as how environmental education can be linked with ethical and moral values, and the need to stress the notion of ecological democracy through reflexive attitudes in the schools. This discussion is essential to bring about new strategies affecting environmental education for citizenship, as defended by this research.

In the case of Brazil, the development of environmental education has been a controversial issue although some positive initiatives have been taken. It is important to recognise the validity of some significant actions related to environmental education which have been taken during the last few years, but, at the same time, it is still necessary to rethink some essential aspects – for example, the link between environment issues and social justice and citizenship. It is possible to conclude from this that environmental education has a long way to go before it can be considered to be in any way properly established, particularly in the critical sense that will be argued in this thesis. Even though environmental education appears as a compulsory subject in the curriculum, it still has to create educational spaces of social participation where teacher and students can become environmentally aware through dialogue and argument. In this context, the relationship between environmental questions and the social conditions should be considered as an essential premise. The degradation of the environment has a deep causal nexus with the model of development adopted by Brazil which is a capitalist society in a global setting (Quintas, 2002).

Some authors, such as Reigota (1994), Vasconcelos (1998), Layrargues (2000), Quintas (2002) and others have discussed the role of environmental education in Brazil. Reigota (1994) believes that environmental education should be connected with political education to prepare people for citizenship and social justice. He argues that environmental education in itself cannot solve every environmental problem. However, it can lead to an awareness of the rights and responsibilities of citizens. In view of this:

Environmental Education should be understood as political education, in the sense that it demands and prepares citizens to claim social justice, national and planetary citizenship, self-management and ethical social relationships among human and between humans and the environment (Reigota cited in Budds, 1999:15)

Layrargues (2000) echoes a similar perspective, arguing that it is necessary that environmental education help improve the quality of life for people. It is worth pointing out that this author analyses environmental education by linking it with a political and ideological dimension. Thus, environmental education is an ideological phenomenon – it is not neutral. Following Layrargues' analysis, it can be said that there are two political perspectives, which can orient environmental projects:

On the one hand, there is the *hegemonic*, in which the conservative movement proposes a reform project, adapting to some aspect of a new situation, but maintaining intact the economic rational of its ideological base. On the other hand, there is the transformation-seeking/subversive movement which seeks to implement an alternative option, inserting ecological rationality into the ideological nucleus of our society. (Layrargues, 2000:171)

Quintas (2002), too, envisaged environmental education in Brazil as being connected with a critical perspective of social change. For this author, education and environment should be linked with emancipatory actions, which take in issues of economic development where everyone has access to the wealth produced in society. The exclusion of people from social wealth is seen as the main impediment to environmental health. Thus, according to this author:

The educational process must be structured ... in a cogitative process, which is in the form of a dialogue involving all the subjects; it should respect plurality and cultural



diversity ... and enable a full understanding of the problematic aspects of the environment to occur in all its complexity. (Quintas, 2002:4 – my translation)<sup>1</sup>

Vasconcelos (1998) criticises some characteristics of environmental education carried out in Brazilian schools. For instance, there is often predominance of practices such as the organisation of vegetable gardens, commemorations of special dates (Day of the Tree, for example) and so on. Of course, these events have a certain importance, but they achieve little or nothing in making people aware of environmental issues and real problems found in the communities where the pupils live. Such activities tend to provide students with techniques, almost as ends in themselves rather than as aims for deeper political understanding of how to bring about for example, socio-political awareness.

In concluding this analysis, it is important to point out that critical environmental education is an essential strategy. In other words, it may provide the basis for changing behaviour to create new strategies to improve environmental conditions, leading to a better quality of life and to equity. Following this, a critical interpretation of social and ecological concerns is indispensable. This implies breaking down traditional attitudes at school, such as the pretence that superiority can be imposed by a dominant discourse which does not take into account social and cultural differences. In other words, it is necessary to consider school as a space for praxis. Students should engage with this and consequently it is necessary to create new conditions for social participation at school. To this extent a “new culture of argument” (Myerson & Rydin, 1996) linked with critical thinking can be used to usher in a new democratic culture in Brazil. The establishment of an emancipatory or critical interest (Habermas, 1983) can provide young people with a new understanding of how to make environmental interpretations of local and global changes. This can be the base on which to create a new “identity and ecological democracy” (Huckle, 2001). In other words, environmental education is a form of citizenship education, which may be able to reinforce the ability of people (students, teacher and whole communities) to reflect on and act in society.

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<sup>1</sup> Portuguese version of the quotation is: “O processo educativo deverá ser estruturado ... num processo de ação e reflexão, de modo dialógico com os sujeitos envolvidos; respeitar a pluralidade e diversidade cultural ... e proporcionar a compreensão da problemática ambiental em toda sua complexidade”. (Quintas, 2002:04)

It seems appropriate at this point to stress that environmental education should be connected with education in citizenship. Both issues have a political dimension, which contains moral and ethical values which are related to social justice for the people. Environmental education must be able to encourage and prepare people (citizens) for social justice and citizenship.

In conclusion, it seems that without doubt the challenges in relation to environment education in Brazil are large. A new understanding of the environment and environmental education is necessary, which shows creativity in the way it makes critical interpretations of ecological concerns. Above all, it is necessary to transform environmental education so that it can acquire potential as a real instrument of personal and social change. In the light of the review of the literature, this chapter has made some important observations which are relevant to the central concern of this thesis:

- It is not enough that environmental education is officially recognised in the curriculum
- It is necessary to formulate new initiatives for support, which encourage critical thinking in relation to the environment
- It is necessary to encourage a kind of critical thinking, which can lead to a new culture of argument and a new democratic culture in school and in society.
- It is of fundamental importance to clarify that there should be a link between environmental education and citizenship in a political perspective to maximise the human and social potential required in environmental health
- Above all, it is essential that teachers and others appreciate that there is a connection between environmental education and social justice. This relationship is underpinned by moral and ethical values, can lead to a new way of improving the quality of life for people in Brazil.

## **2.7 Conclusion**

This chapter presented origins and background of environmental education. It discussed environmental education connected with sustainability ideas, citizenship and social justice values. As a conclusion the chapter discussed environmental education in Brazil concerning historical aspects, curriculum and practice. The next chapter addresses the link between

environmental education and critical theory. The main goal of the next chapter is to endorse the position that promotion of new strategies for fair and consistent education with an emphasis on a critical perspective is particularly important in realising the potential of pupils.

## **Chapter 3**

### **A critical approach to environmental education**

#### **3.1 Introduction**

The purpose of this chapter is to situate critical theory within environmental education. The chapter will explore some aspects of Habermas' view of 'communicative action' linked to participatory and ecological democracy. In this connection, concepts of dialectics and praxis are addressed so as to discuss ideology and alienation from nature and the impacts of these upon environmental education. This chapter examines some of the implications of critical theory and its importance in developing a critical environmental education for social justice and ecological citizenship. The chapter explores the use of environmental education linked with critical theory and what has been termed the 'new culture of argument' (Myerson and Rydin, 1996). Finally, considerations focused on recent developments and findings concerning environmental education research are made to reflect the use of critical analysis for emancipatory actions.

#### **3.2 Critical theory: origins and background**

The use of critical analysis, including critical theory, has been controversial. Indeed, critical theory has been understood in a variety of ways. As an example of this, Carr and Kemmis (2002) state that critical theory has been seen by some as being nothing more than an effort to overcome the "weakness of orthodox Marxism" (Car and Kemmis, 2002: 131). In fact, critical theory in some aspects draws on the Marxist intellectual project. Nevertheless, language and moral conceptions, rather than labour, which is the focus of Marxist theory, have become the main concerns of critical theory (Huckle, 2001).

The term 'critical theory' is connected with what has been known as the 'Frankfurt School', and Horkheimer, Adorno, Marcuse and Habermas have been recognised as the main critical theorists. This thesis is particularly interested in Habermas' critical view of 'communicative action' since it may be closely linked to participatory and ecological democracy. Habermas sets out the idea of ecological democracy and approaching citizenship through a competent discourse which could lead people to an ecological rationale. In other words, people could reach a consensus through a situation of ideal speech, which should not be distorted by

power relations, and leading towards a transformative environmental discourse (Dryzek cited in Huckle, 1996 and Dryzek, 2002).

Valle (1999) states that, in the view of Habermas, the concept of communicative action supplants the simple idea of sharing information among individuals. It is focused on an intersubjective relationship where the components of conversation attain a rational agreement which is not distorted by power relations. Essentially, communicative action is based on spontaneous relationships where individuals use argument to convince their interlocutors. In fact, the rationality idea is connected with an argumentative procedure where two or more people agree on matters such as truth, justice and authenticity. Thus Habermas is concerned with a particular kind of communication: argumentation. By means of this, the participants must "critically examine a hypothetical claim to validity" (Habermas cited in Endres, 1996:3).

Endres (1996) argues that Habermas posits three general levels of communication. The first is related to the logical level of a consistent argument which seeks to avoid contradictions during the conversation. The second refers to a dialogical or procedural level where people engaged in the discussion must adopt a hypothetical attitude towards their immediate needs. What Habermas identifies by hypothetical attitude implies that people in the argument "...step back from their personal perspective and consider the relevant issues critically" (Endres, 1996:4). The third level, namely the rhetorical or process level, requires that the "structure of the speech situation be immune to repression and inequality" (Habermas cited in Endres, 1996:04).

The participants' interactions in the conversations occur in a cultural and contextually defined field, which Habermas calls 'lifeworld'. The lifeworld in Habermas' theory is divided into three dimensions: objective world, social world and subjective world. In the first, the facts are interpreted in an objective way insofar as they are independent of human actions and serve as a reference for the establishment of objective truths. The second dimension is to do with inter subjective relationships. In other words, the social world is created through human interactions which are determined by social circumstances. These circumstances are historical and correspond to the way the individual interacts in society. In the third, called the subjective world, the lifeworld is based on the personal experiences of



each human being. When the participants manage to communicate within these three dimensions, they get a decentralised view and understanding of justice and truth. This means that people reach a level of understanding in which personal needs are superseded by more general and social needs. The results of conversation and human interaction must be informed by ethical decisions. The central idea of ethical discourse is that a norm can be considered valid if it provides that everyone who is affected can accept the consequences that arise from it. Habermas' argument is based on communicative skill which is an ethical assumption of individual self realisation.

Habermas (1983) states that emancipatory knowledge is produced in a process of communicative action where the structure of the 'discourse' is particularly different from mere 'speech'. In other words, during everyday speech conventional norms are maintained. On the other hand, discourse supplants the simple idea of speech. In discourse, the people involved may discuss and question the norms through genuine agreement and consensus. It is emancipatory as the idea of consensus is generated during the process of communicative action. The truth about a problematic situation is arrived at through a free participating process in which a rational statement is formulated in the course of a democratic discussion. From this perspective, everybody must have the same opportunity to participate in all the aims and attitudes of conversations whether it be expressing their ideas, asking questions, agreeing or disagreeing.

Habermas' theory postulates that the argument is generated as a product of democratic participation. The fact which must be faced is that the argument is the result of a critical and emancipatory process. More precisely, people become emancipated when the individuals involved in a public discussion are able to discuss a problematic statement in an autonomous way. In particular, such circumstances are in Habermas' view a basis for social justice and democratic emancipation. Justice and emancipation are central characteristics of Habermas' theory. In such circumstances, the 'truth' must be closely bound up with the idea of freedom and social justice.

In practice, the participants involved in a discussion must have the opportunity to develop their self-reflection. The process of self-reflection is grounded on a dialectical and praxis perspective where people are able to think and conduct their practice with a view to

changing it. In other words, through self-reflection and argumentation, individuals may understand the world and take actions to bring about justice and freedom. This can be understood as an emancipatory practice that proceeds from political struggle. Habermas (1983) states that self-reflection is able to liberate and emancipate people from false abstractions or ideological statements imposed by dominant coercive situations in real life. For this reason, the conception of argument advocates for Habermas (1983) represents for this research a good opportunity to reflect about the role of environmental education towards a more egalitarian society.

### **3.3 The dialectical dimension of nature from the notion of praxis: demystifying ideology and alienation**

Critical theory renewed the Aristotelian conception of praxis: the notion that theory and practice are in unison (Melrose, 1996). The concept of praxis is connected with the idea of transforming the conditions in a society. It incorporates two main principles – reflection and action – and there is an intrinsic interdependence between these elements. For the praxis to take place, it is necessary to have action – but not mere action, rather reflected action. Praxis is related to the idea of the transformation of social life as a result of peoples' action and reflection in an inter-collective process. Thus, the realisation of praxis is not framed on individual bodies; rather, “conditions of life are changed when such bodies engage action in relations(ships) with others” (Le Grange, 2004:389). Consequently, the idea of praxis is interconnected with a dialectical interpretation of society and nature. Bhaskar describes the dialectical process as being:

any more or less intricate process of conceptual or social (and sometimes even natural) conflict, interconnection and change, in which the generation, interpenetration and clash of oppositions, leading to their transcendence in a fuller or more adequate mode of thought or form of life plays a key role. (Bhaskar cited in Low & Gleeson, 1998:21)

Habermas' 'lifeworld' includes dialectical and praxis dimensions where elements in nature are interconnected and are able to transform themselves. Mutually, the conceptions of praxis and dialectics take into account social contradictions, such as social differences between people, to explain social phenomena. For Habermas' theory the idea of nature and society are intrinsically related since the interactions between human beings come from

cultural world. In this sense, the comprehension of 'lifeworld' cannot be realised without considering the interdependence of humans and nature. In other words, all social phenomena are interconnected, and have an influence on each other. For instance, elements such as organisms and the environment, or nature and society, are all dialectically related because each of these elements is able to change the other.

However, nature is not always perceived as a human creation; rather it is supposed to be an organism by itself in which there is no interdependence between people and their environment. As Le Grange (2004) argues, the division of human consciousness from nature in Western culture "has made it possible for nature to be controlled, manipulated and exploited for human greed" (2004:389). For critical theory the separation between humanity and nature is related to two important elements: alienation and ideology. Both alienation and ideology have specific connotations but in general they represent a spectrum of ideas, which are used to stick to a determined kind of thinking and behaviour.

In critical theory, alienation has a deep meaning and on the basis of a Marxist interpretation alienation is a social process which separates human action and thinking. Marx's theory states that the capitalist model of society has caused a constant state of alienation. In particular, the majority of the population live without enjoying the wealth which they themselves have produced. Indeed, many people in the world have no access to the basic conditions of life. Underdeveloped countries, and even some developed ones which, even though considered rich, face conditions of internal poverty, find themselves in this situation. Of course, such circumstances are more pronounced in underdeveloped and developing countries. In Brazil people are very often conditioned to live in inappropriate places, with a bare minimum of resources (Gohn, 1995). It is in such conditions that degradation of the environment sometimes occurs – there is no alternative.

Alienation occurs when there is an absence of control with regard to what is socially produced in nature. In other words, alienation occurs when people are excluded from social and political decisions. Guided by these convictions, Pepper (1993) reiterates the point:



We are alienated from our own creation because we have not yet exerted conscious social control over the process – *our* process – which created the environment, in order to make it more desirable. (Pepper, 1993:114)

The absence of conscious social control described above by Pepper (1993) is related to distorted conceptions about nature in which people are separated from their own creations. Thus, ideology has the fundamental task of corroborating the alienation. An ideology is a system, or set of ideas, which determines the form of thinking that is found in a society. Essentially, it is a world view that contains some assumptions which are considered to be absolute truths that are never questioned. Marx (1974) suggests that the kind of production which exists in society determines the form of thinking of this society. Thus, for example, a capitalist society forms ideologies which support and maintain this system through the idea that capitalism, together with its social and economic organisation, is the only possible system.

Ideology produces social consensus, which gives legitimacy to the system and preserves it. This suggests that the ambiguities in a society, such as the social and economic differences that exist between people, can be explained and reinforced by the dominant ideology in a particular society. Inequalities are normalised, that is, naturalised as being unavoidable. Examples of these ideologies are the beliefs that environmental problems are more intense in poor countries or that poor people show a greater inclination to destroy the environment and damage nature than the rest of society. Thus, damage to ecological systems and the consequences of this for people are justified as inevitable, through a predetermined ideology of progress and technological development. In this sense, the notion of progress, particularly as defined by dominant Western views, propagates particular forms of development centred on perspectives from industrialised countries without taking into consideration the specific realities of each country. Thus, the metaphor of progress serves the interests of certain powerful sectors of society at the same time that it endorses the position that development is associated with economic growth and modernity equated with consumerism. Hence, the idea of modernity has brought advances on the one hand and discrepancies on the other. Palmer (1998) alerts us to these differences:

Industrialised countries have unsustainable patterns of consumption and production. Such excessive demands and unsustainable lifestyles among the wealthy sectors of humanity contribute significantly to environmental degradation. (Palmer, 1998: 54)

There is, therefore, a distortion of the relationship between nature and society in which the dominant interests are used to justify particular attitudes towards the environment and people in which global problems tend to be viewed from an individualist perspective, that is, the causes and consequences of environmental problems such as pollution, deforestation and degradation are attributed to individuals and not to the global system of production and consumerism. Ideologically, the comprehension of environmental problems is interpreted based on an ecological ethics in which preservationist orientations are at the core of environmental actions.

Understanding nature through praxis and dialectical views means realising that human consciousness and nature are united so that it requires peoples' critical participation to change the existing social structures. In this sense, environmental changes need to be understood as a political process in which more than trying to change lifestyles (usually conceived from dominant positions) we need to be able to bring about some democracy and justice for those who are living in an "unsustainable world" (Huckle, 2001).

In such circumstances, it is essential that a new discourse to create democracy for people is found, but this must not be an imposed discourse. It is necessary for the world to become more democratic so that people have a stake in and can support the basic principles of justice as summed up in Habermas' statements. This will only be possible through praxis, as has been discussed, and bears out the crucial role of critical education in liberating individuals. Understanding the dialectical dimension of nature from the notion of praxis means to demystify ideology and alienation promoting people's realisation of a democratic and equitable environment. Thus Huckle (2001) claims that people's habits, customs and/or institutions such as schools are "articulations of social relations in time and space" (2001:147). People themselves must be able to decide what forms of social and ethical behaviour should regulate the relationships between human beings.

### **3.4 The potential of environmental education to demystify ideology and alienation through dialectics and praxis**

Situating critical theory upon environmental education implies conceiving of the impact of nature as a social phenomenon. It means comprehending environmental education and nature from a new ecological ethic oriented to demystify the separation of consciousness from nature which reifies alienation in the minds of individuals. Distinct from traditional perspectives, in which education serves to perpetuate the status quo, critical education is emancipatory since it envisages critical thinking. The development of critical thinking through the use of argumentation or communicative actions prepares people to confront social structures propagated by ideology and alienation. In practice, reflection on concepts such as alienation and ideology connected with nature and environmental education need to be exposed by educators as a way of overcoming social and environmental injustice. Indeed, this means countering the Cartesian duality in which the environment and culture are separated conceptions (Le Grange, 2004). Dialectics has a wider view of society and nature which provides an important way of enabling teachers to re-think some pedagogical practices as they apply to environmental education. Learning and teaching with an emphasis on critical theory could be a form which “invites students to recognise and discover what is typically hidden from us” (Moore: 2000:152). In other words, it has the ability to create new ways of understanding the social world and changing it. In essence, it represents a way to bring about “different possibilities for transformative knowledge creation, reflexivity and critique” (Lotz-Sisitka, 2004:291).

Huckle (2001) asserts that the concept of praxis is governed by a dialectical perspective, where all knowledge must be “viewed relationally” (2001:153). Thus, the notion of praxis is linked as part of a totality, which is “always in a state of movement or change” (2001:153). This assumption is essential for progressive environmental education since it is through praxis that people can overcome their sense of alienation. In other words, it is through critical thinking that people can choose to change their lives in accordance with a democratic process. For instance, an understanding of praxis is a step towards critical education, such as citizenship education, which can encourage argumentation and the solving of problems in a critical way. For this reason, it is essential to achieve praxis for the people. In reality, teachers could be important elements in finding strategies to enable critical action and empowerment through environmental education. In this context,

emancipatory environmental education based on a perspective of praxis best exemplifies the way to deconstruct the dominant ideology through students' empowerment so as to produce a counter-hegemonic discourse able to explore social changes. In particular, teachers can be considered as social agents – first of praxis, and secondly because they have professional knowledge which could be used to form a critical perspective. Thus, for Huckle (2001):

... professional knowledge can be useful only in dialogue with people's knowledge on an equal footing through which both can be enriched, and not in the arrogance of assumed superior wisdom. (Huckle, 2001:154)

Considering this situation, the impact of environmental education must be oriented so as to enable learners to understand that there is a reciprocal relationship between humans and nature – whereby people are able to create nature while, at the same time, they are created by nature. In this sense, environmental education and environmental educators can be considered as indispensable beings of praxis, able to form a new kind of social relation at school and in society. By this means, it is possible to create new spaces of social participation at school, through relationships framed in a horizontal manner. Teaching in a horizontal perspective means developing a creative and critical education as opposed to an authoritarian education. It entails valuing the knowledge that students bring to the classroom that can help lead to a more just society. This means that teachers (acting as political agents) are able to form a new kind of relationship at schools, where the real life of pupils can be considered the main input (key ingredient) for the everyday practice of education. The political commitment of teachers to understanding students' actual lives can contribute to demystifying alienating practices and lead towards a sustainable society. Developing education in a horizontal manner can promote students' self-reflection in an emancipatory way as is illustrated by Habermas' intellectual project (Habermas, 1993).

The idea of students' empowerment seems to be essential in the context of comprehending nature from the perspectives of praxis and dialectics. In this sense, as declared by Le Grange (2004), a socially critical education for the environment “might best exemplify social praxis and embodiment” (2004:391) in which students engaged collaboratively try to understand and solve environmental problems based on “efforts to change socio-ecological conditions” (2004:391).

In this context, environmental education framed in a critical perspective has a fundamental task: challenging the way people interpret human-nature relationships which often take for granted values dissociated of social and political principles. That is, it is necessary that environmental education should be able to demystify myths through a critical pedagogical practice which can lead pupils to reflexive thinking about social and ecological phenomena. Teachers must be more than purveyors of curriculum content but, rather, educators “in favour of a liberating process” (Shor & Freire cited in Moore, 2000:152) in their dealings with nature and society. However, this will be possible only by people overcoming their social alienation through praxis. Praxis informing education is of crucial importance to counter alienation and the impact of the dominant ideology as well as to the promotion of social justice and ecological citizenship towards a more just world as assumed by Habermas (1993).

### **3.5 Environmental education, social justice and ecological citizenship**

There are different approaches to determine how exactly social justice should be conceptualised, and different levels of studies from macro to micro perspectives may be employed to analyse it. In this respect, Gewirtz (1998) contributes to a prominent debate on conceptualising social justice in education. Her analysis includes a valuable examination of contemporary discussion about it within social theory. Gewirtz’s work critically examines social justice from the perspective of distributive justice and relational justice. In her perspective, social justice is not only related to the way goods are distributed in society (Rawls cited in Gewirtz, 1998). Rather, it is a complex and relational concept where the nature of the relationship is structured in society. In such circumstances, justice has to be characterised through the idea of injustice which Young (cited in Gewirtz, 1998) refers to as the five faces of oppression: exploitation, marginalisation, powerlessness, cultural imperialism and violence (Young cited in Gewirtz, 1998).

In a dynamic view, injustice is a result of a distributive process and at the same time it is bound up with social and structural relations. It incorporates multiple spheres concerning power relationships. In fact, social justice involves a wider range of assumptions and includes formal and informal elements which are formulated in a social context. The

passage below from Reiss (2003) illustrates the inter-connection of the relational and distributive dimensions of social justice:

Social justice is about the right treatment of others (what Gewirtz (1998) characterises as the relational dimension of social justice) and the fair distribution of resources or opportunities (the distributional dimension). (Reiss, 2003:13)

In the light of this, it seems clear that social justice should be understood in connection with an actual and critical comprehension of society. It is necessary to face social justice as a political conception which is defined by economic, historical and social perspectives. Young's argument about injustice and oppression (Young cited in Gewirtz, 1998) offers a valuable view of the way social justice should be effected in different spheres.

Social justice should be embedded in the educational and environmental arena so that it can be characterised as an important pillar to gear citizenship practices towards ecological changes. Given the fact that many environmental problems have a structural basis and that many people are living in poor conditions, a new conception of social justice is needed. In fact, social justice should go beyond just having a distributional perspective. There is a vital need to extend people's participation in the decision-making process through democratic principles. This view is related to the kind of society and education that is currently driving the pedagogical process in schools.

Reflecting on how education, and particularly environmental education, can contribute to bringing changes is an urgent task if we want a different society with more social justice and more egalitarian conditions. Critical actions by educators can be a valuable strategy to empower young people to examine and to change the future world. Consequently, it is of vital importance to enhance empowerment orientation and emancipatory actions. In this sphere, it is important that the role of education be re-examined as Freire (1993) pointed out:

It is in this way that the re-examination of the role of education is imposed - rather than being the doer of everything, it is a crucial element in the reconstruction of the world. (Freire, 1993:14) (My translation)<sup>2</sup>

Education can be a valuable instrument to produce emancipatory actions towards social justice and citizenship. Education and environmental education may be used to develop critical thinking and attitudes to examine political and economic processes for deconstructing the dominant discourse. In a practical sense, this means analysing nature and society in a critical way and helping students examine their real world. It is not an imposition of values and conceptions or indoctrination. Rather, it is about helping pupils recognise themselves as politicians who are able to freely accept or modify the world. The task of education is to challenge pupils to make their choices critically, ideas and ideals (Freire cited in Wade, 2001) through a coherent comprehension of the world and consistent level of argumentation. In this context, as pointed by Firth (1995) the teaching practice requires:

... to be grounded in forms of practitioner thinking and activity that involves the rejection of all essentialist and transcendental illusions of human nature, the rejection of totality, certainty, hierarchy, homogeneity and closure. (Firth, 1995:57)

In the case of environmental education, teachers and students should realise the chance for the “legitimate expression of their views” (Firth, 1995:61) and for the promotion of an emancipatory teaching towards a more democratic society.

### **3.6 Environmental education and a ‘new culture of argument’**

Palmer (1998) has examined the work of some authors such as Esland (1971) and Robottom (1982) who have discussed the inclusion of environmental education in the curriculum. For these authors, environmental education makes a crucial challenge to the impact of the dominant ideology entrenched in educational institutions. It can lead to critical thinking between teachers and students. The result can be very positive in relation to what has been called a ‘new rhetoric’ in environmental education (Myerson and Rydin, 1996).

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<sup>2</sup> Portuguese version of the quotation is: “E assim que se impoe o reexame do papel da educacao que , nao sendo fazedora de tudo, e um fator fundamental na reivencao do mundo” (Freire, 1993:14)

In a similar vein, Jordan & O’Riordan (1999) argue that it is necessary to see environmental issues critically. Adams (1999) maintains that the professional agents must use their intellectual ideas for understanding social relations and “even changing them for the better” (1999:132). Environmental education should be used to provide certain kinds of skills and knowledge to undertake transformative actions for the environment and people. Similarly, Job (1996) states that there is a connection between environmental education and values, and that this link should lead to changes in relation to people and the environment. Sterling (2001) declares that:

The real need is to change from transmissive towards transformative learning, but this in turn requires a transformed educational paradigm. (Sterling, 2001:11)

Huckle (2001) argues that it is necessary for education to be engaged with “ecological citizenship”, which must be critical in order to lead to social justice. Professional knowledge must be usefully linked to the knowledge people bring to the classroom. Teachers, according to this perspective, are agents of praxis. Education in Huckles’s view is connected with the democratisation process within a dialectical perspective. Thus, education is empowering to the individual and in this sense is an element of citizenship education.

Lambert (1999) points out that environmental education includes a moral dimension, as it can foster moral education through a ‘culture of argument’ which is advocated by Myerson and Rydin (1996) to replace the ‘answer culture’ which dominates schools. This can be a new rhetoric to encourage change. Myerson and Rydin (1996) argue that the culture of argument represents a new democratic culture. In other words, it creates a new social consensus, which is able to break away from elitist ideologies. The culture of argument consists in a dialectical arrangement where:

... each party tries to win the argument, wanting the discussion to finish. But the result is ironic: the discussion takes off on new tracks ... One synthesis counters another; dialectic of catastrophe is countered by a feasible possibility, and one final feasibility by an alternative. (Myerson and Rydin, 1996:216)



The culture of argument is therefore connected with a new way of thinking, where professional knowledge can be useful to provide a new critical vision of society. Once people, teachers and students are strengthened by this strategy they can find new attitudes and modes of behaviour for themselves. Environmental education can become a powerful instrument to explore these ideas. The link between critical theory, particularly communicative action and the use of argument could be a response to the need for an environmental education associated with a new ethic of social justice.

Thus, environmental education linked with principles of social justice and respect for human rights is necessary for critical pedagogy. In this case, education can help students by “demystifying the dominant ideology” (Shor and Freire cited in Moore, 2000:152). Helping students acquire a culture of argument is an essential condition to create in them new forms of understanding and enable them to act on behalf of the environment. Teachers can be considered as indispensable agents in this process. That is to say, it is not enough that environmental education merely exists in the curriculum. It is also necessary to produce a new kind of pedagogical practice. According to Moore (2000) the curriculum needs “to be explored and evaluated by teachers” (2000:163). As agents of praxis, teachers have the social and professional opportunity to conduct a form of critical education which is governed by moral and ethical values. Thus teachers are responsible for the form of the curriculum.

As Edwards and Kelly (1998) point out, a conceptual revision of the curriculum is necessary to identify what each subject can contribute effectively to enhance the students’ knowledge, understanding and skills. Besides this, a type of curriculum is essential, which considers the potential of each pupil and can help prepare pupils to become effective participants into a democratic society. In short:

In a genuinely democratic society educational provision must go beyond the demands of economic success and social control; it cannot consist merely of forms of vocational preparation and training in obedience; it must, above all things, offer social and political empowerment and opportunities for personal enrichment. (Edwards and Kelly, 1998: xv)

Stoltman and Lidstone (2001) echo a similar perspective when they link environmental education, curriculum and citizenship. According to these authors it is necessary for:

... environmental education to empower present and future citizens to act responsibly on issues of importance both to them individually and to society. This will necessitate revisiting how we organise content and whether that content is an end in itself or means to responsible citizenship. (Stoltman and Lidstone, 2001:216)

Of course, this process is related to a dialectic perspective, which takes into account a critical pedagogy, and is able to prevent pupil indoctrination (Kerr, 1999). Because of this, Edwards and Kelly (1998) argue that it is necessary:

... to recognize, and to accept, the cultural pluralism of present-day societies, ... to impose any one version of knowledge or any one culture on the next generation through the school curriculum begins to look more like indoctrination than education ... (Edwards and Kelly, 1998:15)

Marsden (2001) too has discussed education and indoctrination. The author concludes that historically the link between education and citizenship has shown traces of “inculcation and indoctrination” (2001:26) rather than libertarian actions. More particularly, Doll (cited in Edwards and Kelly 1998) argues that it is necessary to use a type of knowledge that is “transformative rather than cumulative” (1998:15). In the light of this, the kind of innovations in the curriculum which are required involves changes in teaching and learning and encourages critical and reflexive thinking. Thus, pupils should learn to employ critical argument as a part of their social and individual development. It is a self-reflective process towards an emancipatory interest as postulated by Habermas’ theory. In other words, a new culture of argument based on critical education is able to lead to a cultural change. This may provide the right conditions for people to take responsibility for the environment, and encourage efforts towards economic and social change. To conclude, this means understanding that people are citizens or knowledgeable agents who are able to make a difference to their community.

### **3.7 Critical theory and environmental education research: a feasible approach or a narrowing trend?**

Despite debates about the relative merits of paradigms regarding scientific approaches in environmental education, at least a congruent point emerges from research: the global research agenda in environmental education has increased in the last three decades. Indeed, environmental education has become a significant issue not only in terms of the school curriculum but also in current debates for national governments and international agencies (Chi Kin Lee and Williams, 2001). After a period of emergence and institutionalisation, environmental education has diversified into a vast discipline with different perspectives and philosophical foundations. In fact, research in environmental education has been facing a “paradigmatic war” (Gaudiano, 2000) in which the appearance of numerous approaches has been orienting different alternatives to this pedagogical field.

From objectivist and quantitative approaches to a set of phenomenological and socially critical patterns, the emergence of these diverse trends concerning environmental education has in no small measure resulted from trying to answer a single question: What is environmental education for? In this sense, when Robottom and Hart (1993) argued for a more coherent approach to research they were looking for a different kind of enquiry which should take into consideration a new rationale for environmental education. As argued by Gough and Gough (2003), the challenging study of Robottom and Hart written from the margins of the established discourse defied behaviourist orthodoxies imposed by the traditional and dominant worldview of research.

At the same time, discussions regarding research and environmental education gained a substantial impulse from Fien (1993). Fien’s proposal offered a different perspective to understanding environmental issues in opposition to education *through* and *about* the environment. At the same time, the debate concerning sustainability and ecological citizenship ideas expanded. For instance, the proposal of environmental education *for sustainability* (see, for instance, Huckle, 2001 and Sterling, 2001) has oriented many trends in environmental education research in the last few years. The promotion of a radical form of environmental education that encapsulates social and political elements supported many studies in which education was considered as an active generator of knowledge through a socially critical perspective. In this sense, the influence of critical theory discourse on

environmental education materialised from some challenging experiences used to contest the traditional ways employed in the field. Unlike technical-empirical perspectives in which education is seen as externally imposed, in a critical approach teachers and students are conceived as active agents of knowledge. From it, environmental education gains a perspective of participatory and emancipatory enquiry towards a more democratic and fair society in opposition to long-established ideologies imposed by traditional paradigms.

Under the contestant discourse of a new theorising for environmental education different approaches have influenced ways of carrying out research and analysing environmental issues. For instance, the modernist-postmodernist debate concerning educational sciences and the teaching of environmental education have brought a sophisticated analysis positioned on the reconceptualisation of teachers' rationality, so challenging the dominant structure and practices. In addition, the need for 'critical ecological ontology' (Payne, 1999) emerged as possibility to environmental education. Furthermore, it is valuable to refer to analysis which claims to rescue the idea of spirituality within ecology (Boff, 1996) and the importance of feminist and poststructuralist approaches (Gough and Gough, 2003), both striking at the foundations of traditional ecological knowledge. More recently, Bonnett (2004) claims that nature can be reclaimed through an education for a post-humanist age. Bonnett's main idea is the development of sustainability as a "frame of mind" (2004:129) in which human contact with nature is more than a bodily expression, rather it is a cognitive process that involves affective, moral, aesthetic and imaginative receptions and responses (2004:129).

The paradigmatic debate about research indicates that environmental education is not static; rather it is a dynamic, complex and interdisciplinary field in which divergent ideas contribute to the enlargement of this pedagogic field. Moreover, agreeing with Gaudiano (2000), the discussion has contributed in "shaking up the field and dislocating some of the most structured precepts" (2000:1). In this sense, it is not the purpose of this thesis to analyse the validity of different approaches to environmental education. Moreover, it seems inappropriate at this point to discuss the epistemological implications of the use of a pluralistic analysis to research, as argued by Scott and Oulton (1999) when they propose the combination of multiples approaches to environmental education in opposition to what

they call the “narrowing and constraining influence that socially critical theory exerted over the field” (1999:1).

Of course, considering that one attribute of critical research is a motivation to engage in self-critique (Fien, 1993) it is essential to recognise that critical theorising is the issue under discussion in the social and educational sciences. For Scott and Oulton (1999) critical research overvalues education *for* the environment in opposition to the benefits that can be acquired through notions of the *in/about* environmental approaches. According to Scott and Oulton (1999) the separation between the concepts *for*, *in* and *about* is based on “purposes of particular groups and constrains schools practitioners and researchers” (1999:93). In fact, any analysis that takes into consideration the (re)construction of knowledge in a dialectical perspective, as in the case of the research proposed in this thesis, can neglect the value of factual knowledge from notions *in*, *about* or *through* the environment. However, what a critical analysis cannot consider are the objectivist and externally criteria of validation of knowledge which often endorse empirical-analytic perspectives that overvalue pre-existing knowledge.

But perhaps the major criticism of critical theory lies in the premise that it fails in operating efficiently its theoretical assumptions in moving from analysis to actions (see for instance, Robinson, 1994, Scott and Oulton, 1999 and Boone, 2005). This argument is based on the idea that critical theory is often unsuccessful at moving outside its verbal exposition. However, in claiming that critical theory fails to deliver its practical promises, these criticisms fail to reflect important gains in terms of the development of environmental education theorising lasting recent years. There is no doubt that a vital contribution from critical theory came from contradicting the idea that the ecological crisis emanates from peripheral matters such as the reductionism of environmental problems rather than from global and economic concerns. By refuting dominant discourses in which individual problems pose as pivotal matters, critical analysis restores the notion of nature as collective and political.

Focussing on the environment and on environmental education from a different perspective, critical theory brings about the option for minority groups through the reconstruction of concepts such as citizenship and social justice. Attempting to reduce inequalities and

promote democracy, socially critical environmental educators has been confronting the limits of environmental education (Huckle, 1998), helping people to learn to make judgments about ideas and perspectives (Huckle, 2004).

More than this, the importance of critical research rests on the idea of participatory and emancipatory practice which is an essential requisite to the study developed in this thesis. In this sense, if Bowers (cited in Fien, 1993) describes divergences in relation to rational critical reflection since it incorporates a partial and limited vision of empowerment, which he considers as personal rather than general, for this thesis it is necessary to understand empowerment and emancipatory action through a perspective of praxis. In other words, there are no isolated actions – people are influenced by the context at the same time that people act in the context in a process of mediation. Critical theory is a powerful instrument in bringing about social and ecological changes. It is important to note that for the purposes of this research the conceptual background of critical theory is not based on a deterministic vision, which it has often been accused of. Rather:

Critical theory not only provides a framework for answering important questions ... it directs teachers towards an analysis of the causes and consequences of the problems encompassed in the questions and towards a range of possible solutions. (Fien & Hillcoat, 1996:29)

Critical environmental education research is focused on the idea that people aiming at disrupting social oppression from real life socially construct environmental knowledge. In this sense, the action-reflection produced by people is able to transform social and environmental inequalities. Considering this, environmental education practice becomes a powerful instrument for transforming pedagogical practices at schools. Many scholars advocate the importance of developing critical education as a way to transform the formal aspects of the classroom into a more democratic field of social participation through critical pedagogy. For instance, some interesting experiences have been published in *International Research in Geographical and Environmental Education* (Vol.10, No.2, 2001) in which topics such as participation, critical citizenship and social transformation emerge as essential ingredients of the teaching and learning processes needed for a global understanding of environmental issues. From it, it is possible to conclude that educational

and ecological matters result from social questions and do not only arise from individual concerns. Through arguing in a real communicative action (as postulated by Habermas), people can overcome individual problems and move as a communion of interests in a collective process towards a more egalitarian and democratic society.

### **3.8 Conclusion**

This chapter has discussed the importance of critical theory in order to interpret social contradictions in relation to the environment. It is argued that environmental education is important in being able to incorporate into the curriculum a culture of argument to promote the possibility of new critical attitudes in relation to the environment and people. To sum up, critical theory has been able to provide:

- A new ideological ethic based on social justice and ecological citizenship
- A way of improving thinking and attitudes in the face of local environmental problems
- A chance to form counter-hegemonic responses
- An opportunity to foster teacher/pupil self-reflection based on concrete experience and leading to emancipatory actions
- An innovative way of analysing curriculum content and bringing about changes.

The next chapter will discuss the methodological aspects of the research.

## **Chapter 4**

### **The methodology of the research**

#### **4.1 Introduction**

The focus of this chapter is on explaining the methodological basis of this research. It aims at demonstrating the procedural aspects of data gathering during the research process through an action research methodology. There is a clear link between the methodological background and the theoretical approach of this thesis. As well as this, the chapter includes the main concepts and characteristics of action research methodology and sets out the operational guidelines used throughout the enquiry. The chapter also provides general considerations about the ethical issues of this research. In essence, the research methodology described in this chapter responds to the research questions as follows:

- 1) How do teachers understand environmental education in Brazilian primary schools?*
- 2) What knowledge, skills and commitment do teachers display in the classroom when promoting environmental education for ecological citizenship?*
- 3) Did the teachers promote the growth of values of emancipatory action through environmental education?*
- 4) Did the teachers recognise that emancipatory environmental education provides a way of bringing about a kind of critical thinking on the part of the students which is based upon the principles of social justice and citizenship?*
- 5) To what extent did the environmental education practice of the teachers change as a result of their professional development?*

#### **4.2 Choosing the methodology of the research**

Research practice in education, and particularly in environmental education, has adopted a variety of approaches through different theories and methodologies (see Lambert, 2001; Layargues, 2000 and Scott and Oulton, 1999). Distinct perspectives have been used to conceptualise and analyse the development of environmental education practice. In this scenario, a range of literature has discussed which type of methodological operationalisation would be more appropriate for improving teaching, curriculum and syllabuses in environmental education.



Traditionally, educational research has been regarded in the light of three specific approaches, as illustrated by Fien (1992): process-product research, interpretive research, and critical research. Table 4.1 summarises some principal features of these three forms of research.

**Table 4.1** A comparison of three approaches to research (adapted from Fien, 1992:266)

Characteristics	Process-product Research	Interpretive Research	Critical Research
<b>Aim</b>	To describe, explain, predict, and control	To interpret human views and experiences	To interpret human experience within a social context in order to expand the freedom to act wisely and justly
<b>Focus</b>	The way the world works now	The experiences people have of the world as it is	The way the world could be, based upon the principles of justice and democracy
<b>Knowledge interest served</b>	The technical interest	The practical interest	The emancipatory or critical interest
<b>Philosophy</b>	Positivism	Phenomenology	Critical theory
<b>Politics</b>	Conservative	Conservative, liberal	Social change
<b>Research methods</b>	Experiment survey	Ethnography – case study	Action research

Fien's (1992) review is helpful, because it offers different approaches to scientific investigation and identifies some theoretical and methodological aspects of research. Studying the 'real world' is a challenge for researchers, regardless of their professional field, philosophy and methodological choice. For this reason, it is not the purpose of this thesis to make a judgement about the most efficient method to conduct research. However, it should be pointed out that this research is essentially based on a critical understanding of the world. In other words, education, and particularly environmental education, have been analysed by the researcher as a possible way of encouraging the growth of emancipatory actions towards a democratic and fair society. In fact, critical theory, together with action research methodology, provides a genuine opportunity to extend environmental education theory and practice in Brazil. As a result, it seems appropriate to discuss the researcher's reasons for choosing to use critical approach and action research methodology.

#### **4.2.1 Advantages of action research for this study compared with other methodologies**

In view of the character of the research questions set out in this study, which contemplates the possibility of changing teaching practices, action research was preferred to other methodologies. In fact, the nature of the researcher's questions directly influenced the choice of the methodological strategies for this research. Allowing for researching findings which "directly back into the environment from which they are generated" (Lewins, 2003:10) a praxis oriented-research was preferred as being more appropriate to respond to this study. In this sense, the research questions that oriented this study were centred on:

- a) identifying preliminary ideas with regard to environmental education (see research question 1)
- b) analysing the way participants assemble knowledge and skills to promote an emancipatory environmental education (see research question 2)
- c) evaluating the findings concerning the practice of environmental education (see research questions 3 and 4)
- d) extending the practice of environmental education as a result of processing action research (see research question 5).

Considering the nature of the research questions and the intention of reflecting on teachers' practice, the methodology of action research seemed particularly appropriated for such study. In other words, the idea of involving teachers – the practitioners – in questioning their own pedagogical practice, was the key element in defining a data collection method. As pointed out by Armstrong and Moore (2004) action research:

... may provide an arena in which struggles take place over values, meanings and practice. It is potentially powerful both as a technical instrument for introducing, monitoring and evaluating change ..., and as a vehicle for social and cultural transformation in which principles, practices and values are examined, and discussion, negotiation and reflection go on all the time. ( Armstrong and Moore, 2004:4)

This explains why this study had not chosen a single case study methodology or focus group or even an ethnographic approach. Although action research usually settles on the exploration of a single case or associated cases, the process of action-reflection undertaken

by the participants during the research, distinguishes the different nature of these two strategies of research. In practical terms, this means that the case study is a meticulous and concentrated study about a specific phenomenon in its context (Robson, 2002) while action research is concerned with intervening into a particular situation or group of phenomena. Thus, the implementation of a simple case study merely based on observing and analysing teachers' practice would not be suitable for this study, since it centred on developing interpersonal skills and knowledge affecting teachers' practices of environmental education.

At the same time, there was no wish to apply an analysis from the perspective of a single focal group study. Even though both the action research and the focus group are positioned so that they can examine issues from interactions between group participants (e.g. teachers, pupils, parents, etc.), an important distinction regarding the intention of the application had to be made. This was that the main goal of a focus group is to generate reflection and discussions from the expression of the different views and experiences of the involved participants (Finch and Lewis: 2003) about a particular issue. Similarly, action research involves a good level of reflection and discussion about the issue or problem to be investigated. However, the differential feature between action research and a focus group lies in reflecting and acting. The reason for this is that action research requires a process of reflection and action. In essence, the process of action and reflection demands some changes in the context where the methodology is being applied. In the case of a focus group changes may or may not occur in the participant's minds. In a different perspective, action research requires a considerable degree of change in people's behaviour and practice. In the case of this research, setting up a restricted study which involves a focal group would not accord with the objective of this research which is to undertake a systematic and critical enquiry concerning the practice and potential of environmental education.

Perhaps a good choice for this study could be the implementation of an ethnographic approach. In view of the fact that ethnography is concerned with interpreting how a group or community "understand *their* world" (Delamont, 2002:7), a complex description of real life undertaken by the teachers could be a beneficial strategy. Certainly, an ethnographical analysis could bring about a cultural reconstruction of teachers' practices. This, no doubt, could be very important for the teachers' understanding of themselves as subjects of their

own practice. However, it would not be suitable to the teachers who are rebuilding their pedagogical practice with a view to carrying out emancipatory actions. Thus given that the main intention of this research is to demonstrate that teachers can be important agents in the construction of a new paradigm for environmental care, the use of ethnography would not be satisfactory.

The main difference between an ethnographical study and the action research project is defined by the specific aims and goals set out by these varying methodologies. Although ethnography is able to construct complex relations between participants, the use of action research for this study provides teachers with “more intelligence about their situation” (Tesch, 1990). The nature of the knowledge used in this research is based on a critical theory in which teachers have a special role as researchers. Hence action research represents a particular opportunity to introduce an innovative practice into schools in Brazil.

Despite the advantages of carrying out a part of the action research project which is based on the understanding of teachers as practitioners, this research does not ignore some disadvantages which can arise when one attempts to move towards the research setting. For instance, Robson (2002) outlines four main difficulties which could crop up if one carried out a kind of research that is structured on researchers as practitioners. The first is related to the time factor as very often the lack of time can frustrate a good practice. This is particularly the case if one remembers that the practitioners, in this case teachers, have their normal duties to fulfil at school so that it is not surprising they are subject to some time constraints. The second disadvantage is the fact that the participants lack expertise in carrying out research. Their inadequate knowledge in designing, organising and analysing can hamper or retard the research implementation. However, a true action research requires that participants do lack some expertise, otherwise they would not be genuinely learning. The third difficulty raised by Robson (2002) arises from problems over the lack of confidence displayed by practitioner researchers in conducting the enquiry. This, lack of expertise can create hesitation and indecision. The fourth disadvantage is the fact that the practitioner researcher is someone who is ‘inside’ the situation or problem. In this regard, Robson (2002) asserts:

The insider may have preconceptions about issues and/or solutions. There can also be a hierarchy of difficulties (both ways, i.e. with high-status and low-status practitioner-researcher); and possibly the 'prophet in own country' phenomenon (i.e. outside advice may be more highly valued) (Robson, 2002:535)

Despite these limitations, it seems that action research, when agreed through discussion with the teachers as practitioner researchers, is the best option to achieve the aims set out in this study. The researcher is focusing on improving the theory and practice of environmental education in Brazilian primary schools. A driving factor in pursuing this research is a realisation of the premise that teachers and schools tend to relegate environmental education in Brazil to the margins of the curriculum, or else carry out environmental education as an end in itself without any consideration for the pupils' actual lives. In contrast, the researcher's argument is that teachers should have a particular role as agents who are entrusted with adding a new significance to educational practice through the use of concrete experiences from young people's lives. Teachers should be prepared to deal with a kind of environmental education which is able to face ecological phenomena in accordance with principles of social justice and emancipatory actions. In other words, environmental education occurs in the context of this thesis as a possible way of achieving the critical and social orientation needed for the resolution of environmental issues in people's lives. This does not imply that environmental education and social change have to be understood from a simplistic perspective where people's actions are the result of immediate effects. Rather, this thesis is based on the premise that changes can occur dialectically through people reflecting on practice named praxis in their every day lives.

As discussed in Chapter 3, critical theory provides a conceptual basis for the interpretation of social and educational concerns leading to possible solutions through the direct participation of teachers. In this regard Gibson (1986) argues that:

Critical theory attempts to explain the origins of everyday practices and problems, but it goes further. It claims to offer replies to those awkward questions which ask what should be done. (...) Critical theory is not simply explanatory, but is committed to enabling change towards better relationships, towards a more just and rational society. (Gibson, 1986:2)

This thesis considers the action research process as a way in which teachers may be empowered to adopt an autonomous professional approach towards local environmental

problems. Action research also represents an opportunity for undertaking better preparation for professional education. Environmental education research carried out by teachers as research-practitioners can be a powerful instrument to produce reflective professional practice. It may introduce a different teaching and learning process that is able to promote social changes in the local communities of the students.

However, there is not a large body of experience in developing environmental education action research in Brazil. Indeed, with regard to environmental education, there is no permanent teacher training for it. Thus, this research can be an opportunity for teachers to discuss and evaluate their practices as well as to refine their understanding of the theoretical background to environmental education. Action research can also provide an enlightenment of the teachers' everyday practices through dialogue, self knowledge and effective political action. It offers a renewed chance for teachers to develop their personal and collective potential so that they can become active professionally. In others words, the main goal of this action research is to attempt to transform the nature of the teaching and learning process of environmental education. For the purposes of this thesis, teachers are agents of history who are able to shape their practice to transform their reality. This echoes Freire's theory of a praxis process towards people's conscientization and what Habermas' theory argues is a practical discourse where participants can achieve an authentic understanding of the world and life. In such circumstances, the development of critical action research can transpose mere description and interpretation of phenomena towards urgently needed emancipatory actions.

The researcher does not deny that this is an ambitious task, particularly if it is considered that those teachers involved in the process have never had any experience with action research before they undertook the work reported here. In addition, the researcher recognises the fact that teacher empowerment is a complex process which demands constant action and reflection in everyday practice. Thus, this thesis, represents an attempt to expand the reflection teachers give towards an understanding of the teaching and learning process when it is closely linked with the real lives of the students.

To sum up, the justification for using critical action research is bound up with the idea of encouraging participants as practitioners-researchers for the clarification and improvement

of their practices. The participation of teachers in this project has taken on a particular character: for the first time they have been involved in thinking about their intentions, and analysing their assumptions about professional practice. The status of environmental education in the curriculum can only be improved when teachers are components of the solution. As Fien (1992) points out, the compiling of the curriculum depends on “teacher development” (1992:273). Critical theory can be a way of expanding democratic citizenship to environmental education in school and in society through critical thinking and practice.

Using Fien’s research model, this study is based on a framework of critical research which can enable one to understand and analyse environmental education professional practice in Brazil, its challenges and perspectives. For this reason, this research will deal with the interpretation of the experiences of Brazilian teachers at public primary schools in Ponta Grossa, State of Parana. It aims at analysing how environmental education can be improved through critical principles of social justice and greater democracy for people in a perspective of social change. Selecting a suitable critical research methodology raises a number of implications for the research design, which are analysed in subsequent sections.

This research seeks to carry out a kind of critical action research, which aims at supporting the enhancement of the emancipatory potential of reflective thinking through participatory actions. Under these circumstances, the researcher understands that all the participants involved in the process must be able to achieve self-reflection in a social situation to improve their own practices. Moreover, it is believed that critical action research can provide opportunities for teachers in planning, implementing, reflecting and analysing their practices in environmental education.

The next section will examine some concepts concerning action research together with the main procedures of the research methodology and their implications for this research.

#### **4.3 Conceptualising the critical action research process**

Action research can be characterised as a kind of research which is oriented towards the improvement of direct practice. Cohen and Manion (1989) assert that action research comprehends mediation in the situation of the real world through a close intervention into and analysis of a particular field. Hence, according to these authors:

...action research is *situational* – it is concerned with diagnosing a problem in a specific context and attempting to solve it in that context. It is usually *collaborative* – teams of researchers and practitioners work together on a project; it is *participatory* – team members themselves take part directly or indirectly in implementing the research, and it is *self-evaluative* – modifications are continuously evaluated within the ongoing situation. (Cohen and Manion, 1989:217)

Hillcoat (1996) adds that, action research should include:

- advancing practical knowledge relevant to a particular situation
- raising consciousness and empowering those involved in the research
- taking into account of the needs of all those involved in it
- respecting and utilizing the expertise and skills of those involved
- shared control by both researcher and participants of the questions which the research is addressing.

(Hillcoat, 1996:150)

In the light of this, action research demands a constant interaction between the researcher and the people involved in it – the practitioners. Action research embraces critique, challenge and a change of personal beliefs. In essence, action research demands an interest in participatory and emancipatory action. The result of action research can open up possibilities for change. Because of this, it represents a challenge for all the participants involved in the process. In fact, action research is a chance for teachers to evaluate their own practices through critical reflection. In the same way, Fien (1992) points out that action research:

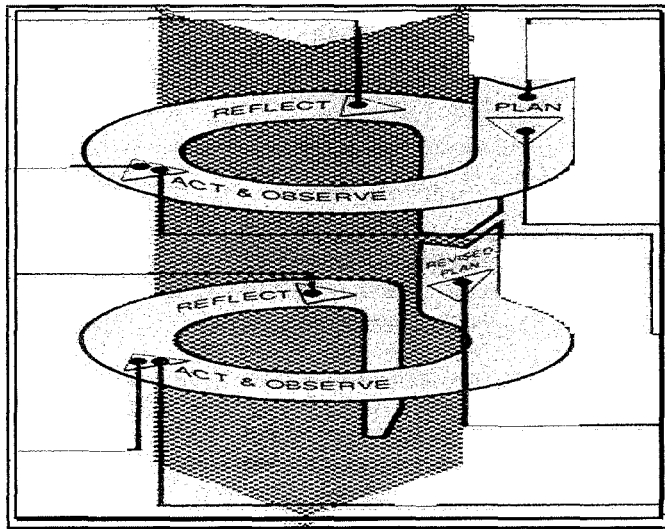
... becomes “critical” when it focuses on the social context and social effects of teaching and engages the teacher in acting to change the material or ideological contexts of teaching ... (Fien, 1992:269)

McNiff (1988) asserts that action research is a way of encouraging teachers to have critical and reflective practice with regard to the educational process. The main purpose of this kind of method is to create the right circumstances in the classroom for teachers to carry out and understand their practices and improve them through participatory procedures. McNiff (1988) reveals that action research can involve small or large scale changes “in people’s lives, and therefore in the systems in which they live” (1998:3).



Action research requires a permanent interaction between everyone involved in this kind of research and the idea of reflection and action must be present during the whole process. McTaggart (1991) believes that planning and reflection must be “collective activities” (1991:33). These activities must be organised in a way where there will be action – reflection – action in a perspective of praxis. This requires planning, acting, observing and reflecting actions successively. Figure 4.1 provides an illustration of this.

**Figure 4.1** Aspects of action research (adapted from McTaggart ,1991:33)



Naish (1996) sets out five characteristics of action research. The first is the collaborative aspect, where the participants have the opportunity to work together and find solutions to their questions and problems. The second is related to the fact that action research has a critical nature and there is a constant need for questioning attitudes during the whole process. The third is connected with the improvement of social situations where “the nature of such situations and ways in which conditions might be changed for the better” (1996:328). The fourth characteristic concerns constant reflective actions which are required to empower the group. Finally, Naish (1996) discusses the necessity of systematic phases, which include: planning, implementation, reflection, analysis and reporting. Each phase must be evaluated in terms of “activity and involvement” (1996:329). Evaluation is a key element during the process of action research and critical-reflective action demands constant evaluations. It is through evaluation that the participants can judge the causes and effects of problems.

Using action research in environmental education can be justified as a way of providing teachers with a chance to develop their abilities in relation to teaching and learning. The interest in engaging teachers in participatory and emancipatory research reveals the importance of having environmental education that is both critical and independent. For the purposes of this research, the benefits of action research can be explained through the development of critical thinking with regard to environmental education in schools in Brazil. Indeed, this research seeks to study and analyse the process of conducting a critical argument on environmental themes and equity. As a result of this, action research provides an opportunity to form critical ideas through teaching practices in environmental education. On the basis of these ideas, this research plans to organise activities (actions) with teachers where they can analyse their practices in environmental education in a rational way and thus be prepared to move things forward. In this sense, action research can be used as an important way to further emancipatory actions. The benefits of action research can be summarised as follows:

- Teachers become the theorists and practitioners of their own research findings
- There is a change in the understanding of the participants, because they are themselves both the resources and researchers, and can become more active
- The participants can become critical of the assessment of content, curricula and materials
- Teachers can transform their practice in new and unexpected ways, especially by providing students with an intrinsic motivation to answer real questions.

(Goswami & Stillman cited in Fien, 1992)

In the case of this research, the development of action research involved a set of tactical procedures. Different methods of data collection and techniques were used to monitor its stages. These elements will be characterized in subsequent paragraphs.

#### **4.3.1 The methods for gathering data**

A central preoccupation of this thesis was to involve participants in reviewing their findings and thus obtain a valuable account of the data selection. The main idea was to encourage reflective thinking on everyday pedagogical practice based on emancipatory actions. It was of vital importance to stimulate the participants to engage in oral discussions which could lead to a sharing of knowledge and conduct fact findings. In such

circumstances, a combination of methods for gathering the reactions of the participants to the research and the achievement of the objectives was used. In essence, these procedures were carried out to analyse and evaluate the implementation of the action research. The validation of the data was assessed in different ways and included the following:

- Researcher's field diary
- Researcher's written reports
- Group meetings
- Semi-structured interviews
- Workshops
- Participant observation.

Data from these different instruments were analysed and compared to obtain a consistent account on the general and particular aspects of the fieldwork. The participants' everyday practice was registered through the researcher's diary and written reports. By means of this it was possible to obtain a valuable amount of information on the development of the project. The practices and reactions of the participants were carefully noted by the researcher. The diary also incorporated a description of the main proposal and the activities carried out by the teachers during the experiment and their evaluations of these. In practical terms, the diary and reports provided a useful and detailed description of the main procedures and activities carried out during the research. The researcher's feelings, judgement and analysis were also described in the research diary.

As well as this, a number of group meetings were held with the teachers and these were a vital source of data collection. The group meetings were organised in accordance with particular issues and objectives that concerned each school involved in the action research. Moreover, the meetings entailed having discussions on the theoretical background, methodological strategies and evaluation of the practice during the development of the project. It is important to note that this procedure allowed the researcher and teachers to plan and carry out the main steps of the action research. The frequency of the group meetings depended on the needs of each school, but in general, about one group meeting was organised monthly in each school.

In the same way, interviews provided a valuable contribution to this thesis as a source of data. Some conceptual considerations on interview techniques need to be pointed out here. Wiegand (1996) argues that an interview is not a mere transfer of information but is a dynamic process where there is an interaction between interviewer and respondent. At the same time, interviews are opportunities to obtain information about an individual's background. In addition, they can be helpful to find out the participants' perceptions in the context of the research.

The use of interviews aimed at collecting ideas, beliefs, opinions, feelings, ways of thinking, actions and attitudes from the participants. For this purpose, a semi-structured interview was selected as a more appropriate way to find out about the impressions of the participants within the research context in particular and to learn about the understandings of the teachers about environmental issues in general. The use of semi-structured interviews provided a flexible design where a set of predetermined questions could be employed in an open way (Robson, 2002). In practical terms, this meant that the researcher could modify questions in the light of the interviewees' responses during the conversation. This procedure proved to be fruitful as it enabled valuable data to be obtained. This data will be examined and analysed in subsequent chapters.

During the main part of the research, there were two phases of interviews. The first was undertaken at the beginning of the action research process. The researcher's aim was to find out what the participants' initial assumptions about environmental education before the development of the action research process. The second phase of the interviews was organised to find out how the teachers regarded their practice during the research. The main goal was to evaluate the changes made by teachers in their pedagogical practices and any influences these might have had. These interviews also aimed at comparing the teachers' preliminary ideas which had been observed in the first cycle of action research with their views after the enterprise. With this in mind, the queries were grouped to investigate the extent of their involvement and any general improvement of practice made by the practitioners (see Chapter 5, section 5.6).

In addition, the teacher workshops provided a substantial source of data as will be shown in Chapter 5 (see Sections 5.7). It is important to clarify here the difference between a group

meeting and a workshop for the purposes of this thesis. The group meetings referred to particular discussions which took place separately in each school. However, the workshops were carried out with all the teachers participating in one workshop at the same time. Two workshops were held as part of this research. The first was carried out at the beginning of the implementation to set out the main objectives and procedures of the research. The second workshop was undertaken at the end of the enterprise to reveal the outputs of the action research.

Another vital source of data for this research was observation. Observation was used as a process which operated from an open system of information. This allowed a significant degree of flexibility in the gathering of general and particular impressions from the fieldwork. In fact, the use of a flexible design represented an important component of the process. Instead of formal observation, in which the researcher's intention is merely to observe the situation without interfering in the event, this research decided to use participant observation. By means of this, it was possible to gather data that was based on different perspectives from those of the participants involved in the fieldwork. In doing so, the participants were not considered as objects inserted in a context but as part of the observed situation. Thus, the development of participant observation allowed the practitioners to intervene and reveal their own insights.

Participant observation has been the target of a good deal of criticism. The main argument of its opponents is the idea that participant observation is largely grounded on subjectivism and hence displays a lack of scientific rigor. In this regard, Robson (2002) offers a different view and claims that participant observation can perhaps:

... sound warning bells of subjectivity and general 'bad science' to those trained in traditional views of experimental design and quantitative analysis. However, it can be argued persuasively that, when working with people, scientific aims can be pursued by explaining the meaning of the experiences of the observed through the experiences of the observer. This arises from a perspective that the social world involves subjective meanings and experiences constructed by participants in social situations. (Robson, 2002:314)

In fact, in action research an essential element is the interpretation of the meanings and experiences of the practitioners. In such circumstances, participant observation constitutes a

vital form of data collection of the observed context. In the case of this study, participant observation formed a part of a cognitive process in which the participants could realise and recognise the main aspects of the social and educational context where they were inserted.

Nevertheless, it is necessary to discuss an important aspect arising from participant observation, which should be, in many peoples' minds an essential prerequisite for research. This is the impartiality of the researcher when undertaking fieldwork. In other words, a researcher's commitment should be concentrated on maintaining a critical distance from the context of the research. This does not mean neutrality. This distance is not framed in a positivist sense but is related to a critical way of interpreting the findings and results. In this context, the interpretation is not neutral but depends on people's philosophical backgrounds. Minayo (1996) asserts that in the social sciences the researcher's point of view as well as that of the participants remains present during the whole process. Similarly, Brown and Dowling (1998) discuss the myth of scientific neutrality and cogently argue that:

The particular interpretation which is made depends upon the ideological position that is occupied by the interpreter. (Brown and Dowling, 1998:87)

Reiss (2002) asserts that scientific knowledge is not independent of its social context. In essence, the author argues that:

... topics on which scientists work – and so the subject matter of science itself – to some extent reflect the interests, motivations and aspirations both of the scientists that carry out such work and of those who fund them. (Reiss, 2002: 03)

From this argument it is possible to deduce that science is not purely neutral – it is ideological. In view of this, the task of the researcher is to go beyond what is visible and apparent in the phenomenon and to use explicit procedures to find the truth. It is essential that the researcher maintains a critical distance and displays fairness in order to target the scientific criteria during the investigation. Thus, it is through evident and clear theoretical and methodological approaches that the researcher is able to obtain a consistent and coherent understanding of the research field. The process of action research demands constant interaction between the researcher and participants, and because of this, there is a

need for trust to maintain the validity of the research. The establishment of a level of trust and fairness is linked with another important category – ethical criteria.

#### **4.4 Ethical considerations of this research**

According to Golby (1994):

Ethical questions arise whenever people interact ... This means always respecting the dignity of others, observing in a more formal sense their human rights ... (Golby, 1994: 24)

When dealing with ethical assumptions, the fundamental principle of research is that people should not be used merely as a resource. Respecting the privacy and confidentiality of people involved in research is an essential prerequisite for carrying out a coherent and morally defensible scientific enterprise. This means that without doubt, the researcher must apply a criterion of honesty and responsibility. Above all, people are ends in themselves not merely means to a researcher's ends (cf. Kant cited in Golby, 1994). In view of this, concerns about the moral dimension of an enquiry should be a fundamental issue.

In the context of critical action research as a mode of investigation, the researcher must be prepared for results, which might be personally and professionally different from the researcher's own expectations. Golby (1994) voices the opinion that an enquiry involves "the researcher in a close relationship with individuals and institutions" (1994:27); because of this, respect for people must be established as an essential principle. This is particularly the case with action research, which involves a constant, close and morally sensitive interaction between researcher and participants. Indeed, in the action research process, a good relationship should be formed during everyday practice. In practical terms, this means that an ethical commitment on the part of the participants is a vital need during the whole investigation, otherwise the results may be unsatisfactory.

Mauthner (2000) discusses the importance of ethical issues in relation to research. According to this author, there is a need to safeguard the anonymity and confidentiality of the findings to preserve the participants' identities. To ensure this, Golby (1994) asserts that confidences must be "handled with care" (1994:26) because of the personal nature of the data. In a similar vein, Brown and Dowling (1998) argue that there are ethical concerns with regard to manipulation of the data. Regarding this they state that:

If teachers and/or children are participating in an experiment, it is important that they are aware of this. (Brown and Dowling, 1998:39)

In essence, ethical concerns are prerequisites for educational and other research as well as for this thesis. For this reason, an ethical statement at the beginning of the research between researcher and participants was necessary to ensure that a responsible piece of research was conducted in accordance with scientific and ethical criteria. During the initial phase of this research, each participant was informed in person of the purpose, goals and aims of the enquiry. Subsequently, the participants were properly consulted on their willingness to participate as practitioners in the research. The teachers were informed about their roles and responsibilities in the period of the action research process. In addition, the researcher explained the methodological procedures which would be employed during the investigation such as meetings, workshops, interviews and constant observation. Information about the nature and implications of the action research was included in the researcher's explanation. This procedure was essential as these teachers had never participated in an action research project before. In this respect, some additional information was incorporated on the following points:

- Warnings to the participants to avoid having false expectations
- The need for commitment by the participants
- Confidentiality in relation to the data
- Responsibility
- Anonymity
- Honesty and clarity over the organisation of the enterprise
- Right for participants to withdraw from the research process at any time.

Comments about the way the enquiry was reported were supplied to the teachers by the researcher. It was explained that given the nature of this research, which has an academic purpose, a formal and detailed account indicating the methodological procedures and the results of the investigation is required.



#### 4.5 The researcher's role within the research process

Zuber-Skerritt (1996) summarised the main features of the role of the researcher in action research projects distinguishing between technical, practical and emancipatory features. These distinctions are based on Habermas' knowledge-constitutive interest formulated by Carr and Kemmis (cited in Zuber-Skerritt, 1996) as follows:

**Table 4.5** Types of action research and their main characteristics

Type of action research	Aims	Facilitator's Role	Relationship between facilitators and participants
1. Technical	Effectiveness/efficiency of educational practice Professional development	Outside 'expert'	Co-option (of practitioners who depend on facilitator)
2. Practical	As (1) above Practitioner's understanding Transformation of their consciousness	Socratic role, encouraging participation and self-reflection	Cooperation (process consultancy)
3. Emancipatory	As (2) above Participants' emancipation from the dictates of tradition, self-deception, coercion Their critique of bureaucratic systematisation Transformation of the organisation and of the educational system	Process moderator (responsibility shared equally by participants)	Collaboration

From Zuber-Skerritt (1996:4)

For this research, participants' empowerment was considered an essential realisation and the idea of sharing responsibility between myself as researcher and the research participants was delineated as an indispensable procedure. Thus, all participants were involved in every

phase of the research and considered as equal subjects in a collaborative process of communication and action. The researcher's position, assumed as a moderator agent (see Table 4.5 – Type 3), permitted a kind of involvement between participants that prioritised a process of social construction of the practice of environmental education actions. This condition entailed dialogical relationships between the researcher, each individual teacher and the group.

The construction of a communicative or dialogical setting as postulated by Habermas' and Freire's premises is not a *per se* action; rather it is a process which comprehends ongoing situations permeated by conflicts and contradictions experienced in the field. In this sense, participants' emancipation is a process of action and reflection assumed in a "dialectical tension" (Carr and Kemmis, 2002: 206) which "explores the power and limitations of practices" (2002:206), revising them and gaining knowledge from the results of amended situations. That is, the development of emancipatory actions is a social construction that emanates from everyday practice – praxis.

In practical terms, this means that although the researcher's moderator role was explicitly clarified even in the first contacts with teachers at schools and subsequently during the first workshop, some participants expected commanding and instructional positions from the researcher. For instance, during the early stages of the action research, some teachers who were not confident about their ability to take decisions tried to transfer their responsibilities to the researcher or to the other teachers. This situation, that will be fully presented and analysed in Chapter 7, permitted the researcher and teachers to reflect about participants' role during the research. Two important points emerged from negotiations concerning participants' role in the process and have implications for the facilitator's role as undertaken during the action research:

1. discussions regarding the researcher's role on the setting, aiming at recognising and demystifying the traditional and privileged positions in which the researcher is understood as an outside expert

2. discussions about the researcher's character and her influence to collect and interpret findings.

These discussions, based on the idea that researchers in emancipatory projects are not neutral subjects, but "constitutive of the data that they collect and of the way in which it is interpreted" (Hall, 1996:28), were undertaken to guarantee the authenticity of the research. The development of the construction of a collaborative pedagogical arena between the facilitator and the participants will be analysed in Chapters 7 and 8. For the moment it is important to point out that participants' realisations concerning their role as practitioners were continually reflected and discussed during the practice. As an essential part of the process of teachers' emancipation these discussions contributed to participants' understandings of the significance of different and divergent points of view. Perhaps the main benefit obtained from the process of these collaborative actions was teachers' attempts to realise that the interpretations of the findings open from personal starting assumptions to a complex set of interpersonally negotiations (Winter, 1996).

#### **4.6 Conclusion**

This chapter has reviewed and conceptualised the methodological procedures employed in this thesis. The next chapter will provide a description of the action research as it occurred in practice in the course of this research. It will also describe the main phases that guided the process of data collection.

## **Chapter 5**

### **Action research in practice**

#### **5.1 Introduction**

The present chapter describes the main methodological procedures used for the development of the action research reported in this thesis. It briefly outlines the main characteristics of the primary schools in Ponta Grossa, State of Parana, Brazil and refers to the selected schools for the research. In addition, it provides a general description of the research implementation including the pilot study and its implications for the main research. In its conclusion the chapter explains the main analytical procedures employed in the thesis.

#### **5.2 Obtaining permission to develop the research**

In the first week of April 2002, the researcher made her first contact by phone with the director of the Teaching and Learning Section of the Education Department of City Hall in Ponta Grossa, State of Parana, Brazil. The aim was to arrange a meeting to obtain a license to conduct the research and to explain the nature, goals and procedures of the enquiry. The meeting was held on 22<sup>nd</sup> April 2002 at the Education Department. During the meeting, the researcher explained the objectives, requirements and methodology of the research. The director showed great interest in discussing the project on environmental education and gave her backing to the initiative as giving teachers an opportunity to carry out research on education and environmental issues connected with equity and social justice. Usually, the director is the person who is authorised to issue a license to gather data. However, because of the international repercussions of the work, the researcher sought authorisation from the General Secretary of the Education Department. On 24<sup>th</sup> April 2002 the license was officially issued.

On 30<sup>th</sup> April 2002, the researcher had a meeting with teachers from the Teaching and Learning Section of the Education Department to plan the action research guidelines. A general review of the main aspects of the Ponta Grossa educational system was made during the meeting. In particular, the meeting permitted to the researcher to identify important elements of environmental education practice at schools in the Ponta Grossa

educational system, such as the lack of interest in the majority of the schools in dealing with environmental matters and teachers' background about environmental education.

Teachers' background about environmental education is restricted to Geography and Sciences pedagogical training. There is no specific instruction with regard to environmental education in the process of training teachers in primary schools in Ponta Grossa municipal system. From 1992 the Education Department of Ponta Grossa has been developing a process of training teachers about environmental education. Considering that this is an embryonic project it will take a long time to the majority of teachers acquire some proficiency concerning environmental education. The lack of knowledge about environmental education from teachers brought some implications for this research such as the need of improving teachers' theoretical background to promote environmental education. This will be discussed in Chapter 7.

The meeting also provided general information on organisational aspects of the municipal primary schools. This information facilitated the process of selecting schools for the research and yielded an initial amount of data.

### **5.3 The main aspects of public schools in Ponta Grossa**

The Ponta Grossa educational system has 84 public schools and 22 private schools<sup>3</sup>. These schools are divided into 11 regional sections where the average is around seven schools per section, grouped according to proximity. All the public schools are hierarchically subordinated to the Education Department of City Hall. Usually the schools are staffed by a principal, two advisory teachers and a team of teachers. The average number of teachers is 12, allocated according to the number of pupils in each school. The average number of pupils is around 350 children per school with 30 pupils per class. In general, a school's timetable is organised into two main parts. The first one works in the morning and is principally designed for students from nine to ten years of age. The second part of the school timetable works in the afternoon and is for pupils from six to eight years old. Children with learning difficulties are sent to extra classes at set times to receive support

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<sup>3</sup> Data from Union of Private Schools in Ponta Grossa.

teaching. Attendance at these support classes is compulsory. The average number of students in these support classes is eight to ten children, but absences are very common.

With regard to teachers' profiles, two main characteristics are found in the Ponta Grossa educational system: most teachers are female and young. Indeed, in primary education in Ponta Grossa female teachers make up 99.9% of members of staff. It is interesting to note that the predominance of female teachers is not restricted to teachers in the Ponta Grossa educational system. According to data taken from a national census concerning primary education, 84.1% of schoolteachers are females (INEP, 2004). In addition, data published by the Ministry of Education in Brazil in October 2004 (INEP, 2004) shows that 74.4% of Brazilian schoolteachers are not more than 44 years old. Indeed, regarding teachers from the participant schools of this research, the majority of them are between 25 and 35 years old.

In addition, the census shows that 51.2% of teachers in Brazil work twenty hours a week at schools. The situation is the same in the Ponta Grossa system where the majority of teachers are officially appointed to teach twenty hours per week. Although there has not been any official survey carried out at schools to identify the social and economic levels of the teachers, informal data gathered from Ponta Grossa Educational Department suggests that the majority of the teachers come from a middle-class background. When the researcher made her first visits to schools to obtain general information concerning the school environment and teachers' profiles, she was informed by the staff that most teachers come from the middle class. However, none of the participant schools provided definite data concerning the social conditions of the teachers.

With regard to the students, according to the teachers from the Educational Department, most local public schools are attended predominantly by students from the underclass. Only a few municipal schools that are located in the central areas of Ponta Grossa have middle class students. It is notable that most teachers from the participant schools stated that, from what they observed everyday in their classrooms, there are clear signs that the children face economic and social difficulties. For instance, they often record social problems such as domestic violence, family neglect, parental alcoholism and child labour. They even add that

many children suffer from learning difficulties as a result of deprived social conditions such as malnutrition or even starvation.

The teachers claimed that absenteeism, from school constitutes a crucial problem for educators, though the level has declined over the last few years. In fact, the setting up of educational programmes by the Brazilian Government which focus on full attendance of students at schools has led to some positive results. However, this problem is far from being conclusively solved. Although some children are having access to more regular education, many parents are sending their children to school only to receive the tangible (rather than educational) benefits from these social programmes (as was reported by the teachers). There is not yet a cultural understanding on the part of these parents of the real value of education. In addition, the teachers stated that many students give up school because they have to work to contribute to the family income. These children carry out activities such as selling products (fruit, sweets, etc) in the town centre or collecting waste (paper, cans, etc) to sell for re-use or recycling.

### **5.3.1 The choice of schools for the research**

The aim of action research is to contribute to the professional and intellectual development of the participants. In this perspective, research of quality depends on finding suitable conditions for its development. This gives rise to, an important factor which is determining the number of people involved in the sample. The initial idea was to carry out research with teachers who work with ten-year old children in all the Ponta Grossa primary schools. But this would have been impracticable as the number of participants would have been approximately 150 teachers. On the other hand, a small number of participants could render the investigation scientifically inconclusive. The adopted option was to reduce the number of schools for a reliable and meaningful study and at the same time to ensure that the teachers had ample scope for professional development. The researcher and teachers from the Education Department decided to draw up some criteria to select the schools and teachers for the research. These criteria were as follows:

- Awareness by the schools of the need to carry out projects of environmental education
- Schools should be selected from a variety of places and social-cultural contexts

- The motive of the schools for carrying out a project of action research should focus on environmental education.

The idea of choosing schools which had shown signs of concern regarding environmental topics was a decisive factor in the selection of schools to be engaged in this research. Although the main aim was to choose schools that were familiar with environmental topics, only five schools (the schools selected for this research) had expressed an interest in the promotion of environmental education. Environmental education had been incorporated as a cross-curriculum subject from 1997 onwards, however, most schools in Ponta Grossa had relegated the topic to a marginal position in the school timetable.

The decision to conduct research with these five schools rather than other schools (which perhaps would have needed a greater stimulus to engage in environmental practice) can be explained by the choice of methodology employed in this research. In other words, the amount of time which was allocated to carry out an action research would not have been suitable to deal with teachers who had no experience in environmental education. Nevertheless, at the outset of the research the researcher observed that although these schools had some experience of environmental education, the teachers lacked the knowledge and skills to carry out the practice. This will be discussed more fully in the following chapters. For the time being, it should be mentioned that the schools' experience with environmental education consisted of some focused activities such as organisation of vegetable and medicinal gardens and some general environmental practices at the schools. One of these schools undertook a preliminary environmental action in the community involving students and parents. The teachers and students from another school wrote some articles to a local newspaper on ecological topics. In general, the sort of environmental education carried out by schools demonstrated little or no awareness of the connection between environmental issues and a more intensive practice towards ecological citizenship.

Coincidentally, the five schools belonged to widely differing social, economic and cultural contexts: a rural zone, a central area, some poor and very poor places. This was very positive since the selection of schools from different places provided an opportunity for a concise overview of the social and educational environment of the teachers and students.



The researcher's purpose was to gather data from a particular school environment to gain a general understanding of environmental education in the Ponta Grossa municipal system.

The next step after the selection was to contact the five schools to discuss with the teachers whether they were interested in taking part in projects of action research which focused on environmental education. Once the five schools had been identified and had agreed to participate, the subsequent step was to select one of them for carrying out the pilot study. The pilot school was chosen at random by the researcher and teachers from the Education Department. The description and lessons from the pilot study are as follows:

#### **5.4 The pilot study**

As an important phase of the investigation, the pilot study was introduced to analyse critically the use of the methodological foundations of the research and to obtain the preliminary impressions of the teachers on the development of environmental education. In this way, the pilot helped to understand the main characteristics of the sample and see its implications for the main research. As a result of this, it was possible to obtain a general profile of the fieldwork and to capture particular aspects of the teaching and learning process of environmental education in a Brazilian primary school.

##### **5.4.1 Conducting the pilot study**

The chosen school for the pilot study is located in the west of the city. The west zone of the city can be considered as a prosperous commercial centre, but it has a large peripheral zone with pronounced poverty. The school has ten teachers, two advisory teachers and a principal. The school is attended by 328 pupils, who live near the school. In general, the pupils are very poor; some of them live in complete poverty on the edge of a polluted stream which crosses the neighbourhood.

The pilot research lasted five months from May to September 2002. The researcher made preliminary contacts with the teachers at the school. A group meeting was organised to explain the objectives and nature of the research, the main procedures and the ethical commitments. Following this, the practitioners undertook some methodological procedures such as the setting up of workshops, group meetings, semi-structured interviews and questionnaires. This set of instruments was used to monitor the implementation as follows:

### Workshops

Four workshops were employed by the participants to organise, implement and evaluate the activities of the teachers. The workshops were divided into three main parts: theoretical background (first workshop), planning the action (second workshop) and evaluation of results (third and fourth workshops).

### Group meetings

The intention of the group meetings was to provide an opportunity for teachers to discuss the theoretical and practical aspects of the research. Four group meetings were undertaken by the participants during the pilot study. Through these meetings it was possible to plan and evaluate the teachers' actions. The meetings also provided a valuable chance for the participants to talk about their feelings, difficulties and problems.

### Semi-structured interviews

The purpose of the interviews was to provide sufficient information on the implementation and strategies used by participants during normal lessons. Following this, nine out of the ten teachers were interviewed. The teacher who was not interviewed was on sick leave. A set of ten questions was used during the interviews (see Appendix 1, English and Portuguese versions). The questions were categorised into four groups as follows:

1. Understanding of environmental education
2. Implementation of curriculum, content of environmental education and its connection with the pupils' lives
3. Perceptions of political and ethical environmental education linked with the development of critical thinking through a 'new culture of argument'
4. The teaching and learning process of environmental education and its relationship with social justice and citizenship.

### Questionnaire

The goal of the questionnaire was to gather together the perceptions that the teachers had of the results obtained through the implementation of the pilot study. It was organised into two principal areas:

1. Forming a picture of the strategies that teachers used during the lessons to enhance critical thinking about environmental education connected with emancipatory actions

2. Identifying teachers' views on environmental education in a critical perspective of ecological citizenship.

The questionnaire was organised under six headings which were the outcome of suggestions made by the participants during the first workshop (see Appendix 2, English and Portuguese versions). The questionnaire was implemented immediately after the second evaluative workshop and the results were collected personally by the researcher in the school.

#### Evaluation sheet

The evaluation sheet was distributed to all the participants involved in the pilot. It was divided into eight open questions (see Appendix 3, English and Portuguese versions). The aim of the evaluation sheet was to determine the degree of satisfaction of the participants with the conduct of the workshops in general terms and to evaluate the organisational aspects of the event in particular.

All the teachers from the selected school agreed to take part in the project and showed enthusiasm and commitment throughout the pilot study although this kind of experience was new to them. According to the director of the school, most of the research which had been previously conducted in the school (both qualitative and quantitative) had been organised as an external process, without the direct involvement of the participants. She said:

The researcher usually arrives at the school to conduct the research. He or she meets the teachers and the school. After interviewing them, he or she analyses the data alone and when the research is ready the results are sent to the school. I don't have anything against this kind of research but the results aren't discussed and analysed with us. There is not any real engagement or reflective participation to find alternatives. Because of this, I think your kind of research can be very useful because it can allow a real process of reflection about environmental education and might provoke some changes in relation to teaching and learning. (Principal teacher of the pilot school – from diary notes made during the first contact at school, 12<sup>th</sup> May 2002)

In fact, the action research was an opportunity for the participants to think about and analyse their role as teachers and researchers. While carrying out the research, it was possible to observe that reflective insights arose from their everyday practice. For instance,

the teachers' actions during the enterprise were rooted in crucial questions such as a) *What kind of teacher am I?* b) *What is environmental education for?* c) *What are the main teaching goals of environmental education?* Questions such as these, which were posed by the teachers, demonstrated that there is a close connection between the teachers' concerns about environmental education and the subject of this thesis. Forming a link between the teachers' self and collective reflection on these questions was possible through a continuous process of planning, conducting and evaluating actions. Two concrete examples of the teachers' perceptions can illustrate how the participants regarded the development of the pilot study and themselves as practitioners.

#### Example One

I think that the research is going to make us teachers to carry out our work on environmental education better. Even though we are not going to work on this proposal [critical thinking] only in environmental education. This proposal can be used not only in carrying it out, but can also be applied to other subjects. (Teacher 7, pilot school, interview.)

#### Example Two

Last year [2001] there was a flood near the school. I was coming to school and saw that there was a crowd in the neighbourhood and I thought: "There must be a flood in some pupils' houses". But I had never imagined the extent of this. I had never seen a flood before. I could not go there to see, because I had to be at school working.

(...)

Now I think that we teachers should have gone there. I have never seen a house in a flood. I mean I saw it on television. I do not live on the edge of a river; I do not know what this situation is like. In the case of the flood, it was a time for everybody at school to think together why it had happened, but we did not do that. (Teacher 6, pilot school, interview)

The purpose of the research was to encourage a systematic and concrete examination of teachers' practices by themselves through critical reflection. The methodology of action research was developed to help the teachers to reflect on environmental education and equity and also other disciplines. The teachers stated that implementation was not easy (it demanded constant reflection and a change of attitudes unlike the traditional form) but stimulated them to make an intense examination of their everyday teaching procedure.

The pilot provided the researcher with important data which allowed for a careful examination of the methodological basis of the research. Both positive and negative aspects

from the pilot phase were pointed out by the participants. By means of this, it was possible to review and improve the essential methodological procedures for the main part of the research.

#### **5.4.2 Lessons from the pilot study**

Through the pilot study, the researcher was able to obtain some important information which enabled her implement the main research in the subsequent phase. The development of workshops, observations, interviews and questionnaires supplied significant insights into the kind of approaches which were suitable for the research. A number of operational and analytical points were observed during the implementation of the pilot. First, teachers constantly participated during the meetings and showed great interest in discussing their practices. However, some of them revealed a lack of confidence about their abilities while carrying out their activities. This situation meant that the researcher constantly had to motivate them which meant having to pay many visits to the school to follow the activities; one advantage of this was that it brought her in close contact with the real life of the teachers and students in the school. As a result of this situation, the researcher obtained an important apprenticeship which allowed her to think about strategies for providing teachers with a greater degree of autonomy during the main research. For instance, one strategy used during the main research was to discuss with teachers the relevance of their work as educators in contemporary society. This brought positive results insofar as it raised the teachers' self-esteem, confidence and feeling of independence.

A second point that arose when planning the pilot were some problems regarding the schedule of the action research. For instance, the teachers complained about the short time taken to discuss their practice compared with the long time taken to discuss theory. Another observation referred to the conclusion of the activities during the workshops. Some of them had difficulties in concluding the activities on time. The participants' explanation was that there was a lack of time for working efficiently. Some activities set by the teachers took a long time and demanded an amount of work which had not been properly foreseen by the participants. As a result of these findings, the researcher was able to review the main strategies applied during the pilot. Thus, as a part of the main research, one essential task was to discuss and plan the activities with the teachers more realistically, by observing what could be effectively constructed as a feasible task.

The third point refers to the fact that during the pilot implementation some teachers changed the activities they had initially planned in the workshop. This did not affect the organisational aspects of the research, but introduced new elements into analysis, such as the difference between the teachers' aims and what was possible to carry out in everyday practice. Again, the lack of time to conduct the activities, as well as the absence of resources, were the teachers' justifications for the changes they implemented in their proposals. As a result, the researcher was able to learn an important lesson for the main research, that is, to discuss the projects carefully with the teachers and take into account the time needed to work on the activities and resources.

A fourth point refers to the criteria used to evaluate the results from the workshops. These criteria were greatly clarified during the pilot. The categories chosen by the participants to define the success of the venture were the quality of productions, willingness and enthusiasm of the teachers and pupils, the level of reflection and discussion during the lessons. For the purposes of the main research, other complementary elements of analysis and evaluation were added to this set of criteria. For instance, the importance of the distinction between what is 'taught' and what is 'learned' through the contents of the curriculum and its relation to the students' lives. Rather than just covering content, the need to deal with the real life conditions of the pupils came to the fore in this context as this would allow for real critical argument and emancipatory actions.

The fifth point refers to the piloted interviews. The semi-structured interview form (operated in an open-ended way) enabled the researcher to obtain satisfactory information about the teachers' perceptions, ideas, interpretations, suggestions, feelings and attitudes to environmental education. The teachers did not encounter difficulties in understanding the questions, nor in expressing their opinions. However, some concerns did arise such as the excessive number of questions. For instance, the researcher noticed during the interview that the teachers got tired when answering a large number of questions. This showed that an essential lesson from the pilot study was the need to rethink questions and order them more clearly in terms of fundamental questions and supplementary ones. A further point was that, for the main research the researcher decided to conduct the interviews in two phases. The first was undertaken to obtain data before the professional development. The second interview was to gather data after the experiment. The researcher's idea was partly to

shorten each interview and partly to allow the later interview data to be compared with the earlier data. English and Portuguese versions of the semi-structured interview forms (first and second phase) used for the main research are attached in Appendix 4.

A sixth and key element is the use of questionnaires to evaluate the teachers' practice and the success of the experiment. Some problems were recognised during the analysis of the questionnaires. For instance, most answers were vague and did not entirely conform to the description of the teachers' impressions about the enterprise. An explanation for this might be the cultural nature of Brazilian teachers who prefer to talk rather than to write<sup>4</sup>. It is important to observe that during the phase of the oral evaluation (workshops 3 and 4) the teachers provided a relevant and consistent analysis of the development of the project. But when they answered the questionnaires, the researcher had difficulties in understanding their responses. One way to have solved this, could have been to return the forms to the teachers for them to clarify but this would have taken a long time and might have been impractical. For this reason, the researcher decided to discuss the questionnaire responses with each teacher. The complementary answers were recorded in her diary notes. This meant that the researcher had to pay more than one visit to the school to collect the questionnaires. In addition, three teachers did not return the forms. One of them was on sick leave and the others said there was a lack of time to respond to the questions.

In fact, Brown and Dowling (1998) warn that researchers often experience problems in the use of questionnaires which can harm a good piece of analysis. Questionnaires "are not always good for exploring *how people think or how people construct meanings*" (Brown and Dowling, 1998: 69). Indeed, considering the nature of this research and the importance of the evaluation phase, the results suggested that the use of a questionnaire for the main research should be replaced with interviews.

Finally, some drawbacks were found in the evaluation sheet which was used to evaluate the organisational aspects of the workshop. For instance, the teachers took a long time to return the sheets and the same three teachers already cited did not hand them in. Nevertheless, the

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<sup>4</sup> Fraga (2002) has been studying the predominance of the oral model used by Brazilian teachers in primary education. According to this author, the origins of this pattern are linked to the Jesuit's model of education

results obtained through the evaluation sheet were more satisfactory than those from the questionnaires discussed above. The teachers' answers were short but clear. The distinct focus of investigation between the two forms could be an explanation for the different results. Indeed, the questions on the evaluation sheet were operational and also simpler than those on the questionnaire which entailed a complex range of meanings. For the main research the researcher decided to maintain the evaluation sheet. However, the number of questions was reduced and simplified. In addition, the researcher managed to get the teachers to answer the evaluation sheet immediately after the end of the final workshop to avoid delays in returning the completed forms.

Implementing the pilot study as a way to test the methodological procedures of the research was considered by the researcher to be an essential task. The lessons obtained from the pilot phase allowed her to review the operational and analytical guides of the main research. Furthermore, the piloting resulted in important insights which were incorporated into the execution of the action research in the main field work.

### **5.5 Access to the main field work**

The process of negotiating access to carry out the main research within four other selected schools started immediately after the pilot stage had been concluded. The first contact with the schools was arranged through meetings with each school principal and teachers. The goals of the meetings were as follows:

- to learn about the school (physical aspects) and the environmental projects developed in each school
- to explain the goals and procedures of the research
- to reveal the objectives, requirements and methodology of the research
- to explain the role of the participants during the research
- to observe teachers' willingness to participate in the research.

Primary schools in Ponta Grossa share similar characteristics regarding organisational aspects and pedagogical procedures (as described in Section 5.3). However, some

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which was applied during the colonisation period. The emphasis on *discourse* and *memory* can be considered an essential characteristic of this model, which has influenced the process of teacher education in Brazil.



peculiarities can be observed within specific social and environmental contexts. These will be demonstrated by a brief description of each selected school below.

### **5.5.1 Brief description of the selected schools for the main research<sup>5</sup>**

#### School A

School A was only opened in 1995 and is one of the biggest schools in Ponta Grossa. The staff consists of 12 teachers, two advisory teachers and a principal. This school is located around the periphery (north zone) of the city centre and is attended by children from the neighbourhood. According to the dean of the school, the majority of the 515 students are from a poor social background. In addition, the teachers often mentioned some sort of social problems faced by pupils such as inappropriate housing conditions and health problems. The teachers also stressed the fact that, the poverty which the students have been subjected to is constantly affecting their learning process.

The local school neighbourhood has a large number of factories. Pollution from factories has led to a serious situation for the local community, added to the almost total lack of, a basic infrastructure needed for a healthy life. In this sense, according to the teachers, many children have been suffering from pulmonary diseases such as pneumonia, bronchitis and asthma.

In addition, some people from the community tend to throw their kitchen rubbish out into the streets or wastelands. In general aspects, this situation has been bringing about some problems concerning health conditions of people. For instance, frequently rats and invertebrates such as flies, worms, cockroaches and scorpions become a problem for people. According to the teachers, students often present some disease caused by these poor environmental and health conditions.

#### School B

School B is located in the southern region of Ponta Grossa, far from the city centre. The school staff consists of 12 teachers, three advisory teachers and a principal. This school

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<sup>5</sup>The information used to describe the main characteristics of the schools derives from the beginning of the implementation of the action research in September 2002. Occasionally minor changes were observed in such things as the number of staff members and pupils. However, these changes did not affect the research process.

displays particular characteristics regarding the 400 children who attend the classes and live in the neighbourhood. In fact, the locality has two distinct categories of residents divided by a polluted stream. On one side of this stream live the residents who have dwelt there for a long time; on the other side live a large number of homeless families who have taken possession of the land. These families are therefore seen as outsiders by the longer-established residents. Social and economic problems are constantly reported by teachers, particularly with regard to the homeless families. A further important point is that the school is faced with conflicts between the two categories of families. For instance, parents from the more recently colonised area ('the outsiders') constantly allege discrimination from the other parents ('the established residents').

In addition, some people from the community tend to throw their kitchen rubbish out into the stream. This, of course, has serious environmental consequences for the community. The stream is located only a few steps from the school and pollution represents a health hazard, particularly for students who have to cross it to go to the school. More problematic still is the fact that some children who attend the school live on the edge of the stream.

### School C

School C is situated in the central area of the city and the majority of the 300 students come from a prosperous economic background. The school has seven teachers, two advisory teachers and a principal. In general, the teachers did not report any social problems at the school.

The school neighbourhood contains shops, offices and some factories. A range of different environmental problems can be observed in the place such as noise pollution and frequent car accidents because of the intense traffic. Pollution from factories can also be observed in the local community. In addition, it is important to note that even though the majority of students are from the middle classes, the school is attended by children who live on the edge of a polluted stream near the school. These children suffer from health problems as a result of the unsuitable environmental conditions. For instance, similarly to the school A, these children are often affected by breathing problems and diseases caused by poor standards of hygiene.

#### School D

School D is located in the rural zone of Ponta Grossa. The staff members of the school are divided into five teachers, one advisory teacher and a principal. The 100 students who attend the school are from different areas around the countryside. Some of them live close to the school but the majority come from distant places. In general, as is the case with most rural children in Brazil, they have difficulties in completing their education as access to a secondary school and college is far beyond their means. Only a few students from rich farming families have the financial means to obtain a diploma of high education.

School D is unusual in that the children attend school all day long. In the morning all the children attend classes and after lunch they carry out different sorts of activities such as computing, arts, sports, leisure, environmental education and so on.

A range of environmental problems can be found in the community where this school is located such as an absence of a basic sanitation infrastructure, scarcity of drinking water, health problems arising from precarious sanitation conditions, deforestation of native forests and so on. For instance, children and their families use to drink water from a river in the neighbourhood. As a consequence, some problems derived from not suitable water (e.g. Verminose – disease caused by worms) are frequent among people from this community.

In addition, a serious environmental problem found in the community refers to the deforestation of native forests to be supplanted by pines-tree plantation. Many children's parents use to abandon their own crops to work as employees in the plantation of pine trees. As a consequence, people gradually have been changing their cultural identity from peasants to urban workers. The disrespect from the industries of wood concerning local diversity and culture represent a serious environmental problem faced by the community.

Considering the sort of environmental problems faced by students in the schools, the teachers pointed out that the research could be a good opportunity to reflect on environmental education classrooms. Moreover, the majority of the teachers understood the action research as a possibility to promote a different environmental education practice regarding students' environmental problems. However, as was found in the pilot school, the action research methodology was new to the teachers. Indeed, if on the one hand the

teachers demonstrated interest in the research, on the other hand, they showed a lack of confidence in participating in a kind of project like this. This was understood by the researcher as natural behaviour since new things can often result in some insecurity for people. Action research was explained by the researcher to the participants, as being a genuine opportunity to develop self-confidence and skills in teaching.

During the first contacts the researcher and teachers organised a general plan of action research. The implementation of teachers' activities was carried out according to the principles of action research cycle: planning, acting and evaluating. The improvement of practice can be considered to be a central characteristic of action research. Following this, the researcher undertook two distinct phases of interviews and two workshops to obtain data to evaluate any changes in the principles of action research. The following sections will describe these stages of the implementation of the research.

### **5.6 Carrying out the interviews**

The first phase of interviews was carried out with teachers from the four schools. All the teachers agreed to participate. All 36 participant teachers were interviewed at the beginning of the implementation. The main purpose was to obtain a general understanding of the practice of environmental education developed by the practitioners. The interviews schedule was designed to find out what the ideas of the participants were on:

1. Environmental education understanding and goals
2. Environmental education teaching processes in everyday practice
3. Implementation of the curriculum and content of environmental education.

The questions asked during the interviews in this first phase were as follows:

1. What do you think environmental education is?
2. In your opinion what is the main goal of environmental education?
3. How do you carry out environmental education in your everyday practice with pupils?
4. Can the curriculum and contents in environmental education be considered satisfactory?  
In what ways?

The second phase of interviews was aimed at finding out how the teachers regarded the results of the implementation of the research. The same teachers who were interviewed

during the first phase were interviewed at the end of the implementation. Altogether, four teachers were not interviewed because they were retired (one teacher), had resigned (one teacher) or on sick leave (two teachers). The researcher sought to obtain feedback on the effects of the action research and to identify changes in the way teachers understood the practice of environmental education. On average, second phase interviews were carried out some 16 months after the equivalent first phase ones.

The questions were grouped into three categories and were in the following order:

1. The teacher's understanding of environmental education and its goals after the implementation of the research
2. The teacher's perceptions of critical environmental education and its links with the development of critical thinking through a 'new culture of argument'
3. The teacher's impressions of environmental education and its relationship with social justice and citizenship.

The questions were as follows:

1. Do you feel that you have changed your impressions of environmental education as a result of the professional development? If so, please, say why?
2. Was it possible to introduce a 'new culture of argument' in the classroom to develop critical thinking? In what ways?
3. Was it possible to use critical environmental education to promote social changes and citizenship in students' lives? How?
4. Have you felt that environmental education was able to result in emancipatory actions towards social justice on the part of the students? Could you give me some examples?
5. Have you found any barriers to carrying out critical environmental education in your everyday practice? If so, please could you say what they are?
6. In your opinion can the environmental education curriculum be considered satisfactory in bringing about qualitative changes towards citizenship?

## **5.7 The workshops**

Discussion of the planning of the workshops by participants was extremely important. During this research, the workshops were incorporated as key parts of monitoring action

research methodology as well as a source of data. Through the workshops it was possible to define the inquiry and to provide conditions for productive reflection on environmental education. It was helpful to identify teaching and learning strategies which could be developed at schools by teachers. The workshops were organised to encourage a systematic examination of teachers' practices by themselves through critical reflection on emancipatory actions. Unlike the pilot study, where four workshops were undertaken, two workshops were designed for the main part of the research. The first was undertaken at the beginning of the experiment and aimed at portraying the main procedures of the research in theoretical and practical terms. The second workshop was organised as an evaluative enterprise at the end of the experiment.

#### **5.7.1 The first workshop**

The one-day first workshop took place on 5<sup>th</sup> February 2003. The principal aims of the workshop were outlined to the participants in the workshop as follows:

- to define the nature of the inquiry and identify issues of concern for the teachers
- to provide teachers with information on the aims, goals, theoretical background, methodology and ethical principles of the research
- to encourage critical reflection on the development of environmental education at schools
- to encourage participants to undergo self-analysis as active agents and to identify possible problems when teaching and to suggest strategies to overcome these
- to help participants to reflect on their everyday practice as teachers and encourage changes
- to discuss teaching and learning strategies in environmental education linked with social justice and ecological citizenship.

The preliminary design of the workshop was planned by the researcher. Subsequently some teachers from the four involved schools and teachers from the Education Department of City Hall analysed the design and offered their suggestions and comments which were incorporated. The workshop was divided into two main parts as outlined below.

The first part of the workshop was organised to outline the theoretical background to the research. The idea was to provide teachers with conceptual elements to reflect on and

discuss the development of teaching and learning processes in environmental education. The second part of the workshop was organised to involve participants in reflecting on teachers' strategies and guidelines in environmental education during the action research process. According to Robson (2002), the initial ideas of the research can be examined in a collective process through formal or informal discussions with the participants. Thus, the first findings can be obtained through interaction and reflection among the participants involved. In fact, the development of the workshops through formal discussions provided significant insights for creating a preliminary set of data.

Some essential tactics were used during the development of the workshop to gather data such as: observations by the researcher, tape recordings, field notes, explanations by the researcher, discussions by participants, narratives, practical accounts and practical activities (working on strategies). Teachers' dispositions, commitments and involvement were some of the criteria chosen by the researcher in order to evaluate the development of the workshop.

#### **5.7.2 Development of the first workshop**

At the beginning of the workshop the researcher carried out a group activity to stimulate reflection and discussion. The participants were involved in a group situation where they discussed the importance and significance of working in teams. Each participant received a little dry stick of wood and was invited to describe it as well as to say what their feelings about it were. Some interesting findings emerged from this activity, such as the teacher's view of the catastrophic future of the global environment because of the destruction of forests and natural reserves in Brazil and in the rest of the world. As well as this, some participants pointed out the role of human beings with regard to the future of the planet, the consequences of nuclear tests and the war between the USA and Iraq.

After this, the researcher asked each of the participants (five teachers) to break their sticks in the middle. This task was easily completed by each participant. In the next step, the researcher asked one teacher to collect all the sticks from the participants and make a bundle, and then invited the volunteers to break this. It is important to note that there were around 50 sticks in the bundle. Each volunteer tried to complete the task without success. They concluded that it was far more difficult to break the sticks because they had been put

together in a bundle. Following this exercise the researcher and the participants reflected on the significance of being together (as in a 'bundle') to face a situation or a problem. The teachers enthusiastically discussed the importance of working in teams to find out and solve problems. They argued that is more difficult to solve a problem when only one person tries to do it. Conversely, when many people are involved and work together the solution can be found more easily. The participants pointed out that a single teacher or school can be easily "broken" like a single stick, which contrasts with the collective process in which teachers can face and solve their problems together more easily. In addition they concluded that people should unite to face the challenges of environmental issues and environmental education.

Following the workshop, the researcher linked the group dynamics with action research principles, and pointed out that there was a constant need for union and intensive participation. She also stressed the need for willingness, commitment and engagement among the participants. The teachers showed great interest in the researcher's explanations. Questions related to the methodology of the action research were frequently asked. In addition, the teachers asked about their role during the process as well as about the main difficulties which could arise during the course of the research. The ethical aspects of the research were also discussed by the researcher and the participants, for instance, the need for honesty and responsibility on the part of the participants as well as respect for their consent and confidentiality during the research process.

The researcher observed that the teachers were confident about relating their ideas and feelings. The teachers showed a strong sense of commitment, willingness, involvement and constant participation during the researcher's explanations which were expressed through questions, comments and suggestions.

A key element of the workshop was the outlining of the theoretical background of the research. The main issues were environmental education concepts, sustainable development, critical theory and a new culture of argument. It is important to note that during the researcher's visits to schools, the teachers suggested discussing the topic of sustainable development. Although this subject had already been included in the draft contents and was discussed during the pilot study, the researcher considered the teachers'



initiative to be very positive, even essential for an action research project. The researcher provided the participants with a copy of an article written by the researcher for the workshop to support the theoretical understanding of the teachers after the workshop. The teachers also received a copy of a reference text on environmental education in Brazil.

During the researcher's explanations, the participants were seriously involved through the comments and queries they made. Critical theory introduced important theoretical elements to enable them to analyse their environmental education practice at school. An example of this arose from three key questions raised by the teachers during the discussion: a) *What kind of environmental education are teachers carrying out at schools?* b) *What kind of environmental education is most appropriate for students' lives?* c) *Is it possible to carry out an environmental education to promote ecological citizenship?*

It is important to observe that teachers themselves raised these questions to reflect on their practice. Following the workshop, the researcher and the participants reflected on the real possibility of carrying out an emancipatory environmental education and on the use of argument (Myerson and Rydin, 1996) at school. A wide range of points arose from the participants' discussions including the following:

- the need to relate environmental education to pupils' lives
- transformative education is necessary to secure social justice
- environmental education is essential to empower students to create a sustainable society
- the need to encourage and enable students to debate and learn about the necessary conditions for social justice and ecological citizenship
- the development of critical thinking and the use of argument can be key instruments in transformative education
- emancipatory environmental education is not an easy task when compared to a traditional approach because it demands constant reflection by teachers and students and constant re-planning of pedagogical strategies.

In addition, the teachers pointed out some strategies which can be used to enhance environmental education and the use of a new culture of argument during their classes, for instance, implementing research by children in their local community, and stimulating debates and discussions with pupils on their own environmental problems.

The second part of the workshop led to a further period of interaction among participants. The researcher's idea was to stimulate teachers to preserve the reflective mindset created during the first part of the workshop. To maintain the interactive process, the participants were invited to listen to a short story. The fable narrates the efforts of the main character (a little bird) to preserve its local environment through consistent argumentation. The story featured some key categories such as power, inequality and equity. The effects of the tale made a strong impression on the group. The teachers linked the fable with the importance of thinking and acting critically to solve practical environmental problems at school.

For the practical phase of the workshop, the researcher invited a teacher from the pilot school to report on her experience of emancipatory action research and critical thinking. This teacher explained to the group what action research means in practical terms and some of her experiences from participating in the pilot. For instance, the teacher stressed the importance of carrying out the use of argumentation during the classes and related how she had observed changes of attitudes among her students. The participants seemed to be very interested in her account. They particularly questioned her about the real involvement of children during the research and changes that resulted from the experiment.

After the workshop, the participants (organised in groups) had a discussion about the topics to be covered and goals which should be reached during the implementation of the lessons. Then, the teaching strategies were planned and organised so that they could be carried out at the schools. The main goals outlined by the teachers were based on environmental education curriculum (NPC, 1997) and can be summarised as follows:

- environmental education and ecological citizenship
- environmental education and improvement of pupils' health
- environmental education and the sanitation conditions in the community;
- environmental education and children's quality of life.

Some instruments and techniques were recommended by the teachers to put the environmental education goals into effect such as:

- the use of drama, music and poetry to encourage debate among the students

- exhibition of photographs taken by students showing the main environmental problems found in their communities
- production of pamphlets and brochures by children to be distributed in the local communities;
- the use of research methods (interviews, observations, questionnaires) by children to investigate environmental issues.

At the end of the workshop, the participant schools outlined their plans to the audience. The schools' plans will be fully described in Chapter 7. The reception was largely positive because all the teachers by now knew the goals, aims and strategies of each of the schools. Moreover, the researcher was able to observe the degree of commitment and involvement of the teachers during the presentations. The kind of queries, suggestions and comments made by the teachers showed that they retained an intense interest during this final phase of the workshop.

The researcher chose an oral approach to evaluating the workshop development at this stage (a written evaluation sheet was used at the final stage of the research after the second workshop – see Appendix 5, for English and Portuguese versions). In their comments, the participants stated that the first workshop provided:

- an important time to reflect on and discuss environmental education
- an unique opportunity to share ideas, experiences and difficulties with each school on environmental issues
- an interesting opportunity to learn about the different reality of each school
- an extra stimulus to teach environmental education.

However, the teachers complained about the fact that the workshop was time-tabled to last for only one day. They suggested that the framework could have been spread over two days. Some important conclusions can be drawn from both the positive and negative factors of the activities of the workshop. The following points can be regarded as highly beneficial to the teachers and other participants:

- high degree of participation and interest during the whole day
- high level of interaction and involvement

- interest in discussing theoretical aspects of the research (conceptual background and methodology)
- enthusiasm in reflecting on and discussing issues
- sincerity in being willing to show and discuss teaching and learning problems found at their schools
- the sophisticated level of theoretical approaches and insights of some teachers
- the quality of some of the plans set out by the schools
- the interest in participating in critical action research.

However, the researcher observed that some teachers had some difficulties in believing in the value of emancipatory actions, although they had agreed to participate in the research.

### **5.7.3 Following the first workshop**

The next step after the workshop was to follow the teachers' practices in each school to support the implementation of teaching and learning of environmental education. This was an essential step to maintain the link between the researcher and teachers after the workshop. Thus, a set of systematic reflections led the teachers to act according to emancipatory and participatory actions. This provided a continuous evaluation of the everyday practice of the participants. In fact, one of the aims of the research was to form a permanent bond between theory and practice.

The schemes planned by the participants required changes in the way in which schools and teachers usually act. The activities undertaken by the teachers as well as the process of changing practice will be properly demonstrated and analysed in Chapters 7 and 8. For the moment, it is necessary to observe that during the group meetings, discussions were held on the theoretical aspects of environmental education connected with social justice and critical thinking to provide teachers with a conceptual background to think and rethink their practice. This was very beneficial since the outcomes were understood from a theoretical perspective and not only in practical terms. This procedure also encouraged teachers to review the theoretical background of environmental education. The themes listed below illustrate the main theoretical issues discussed by the participants during the process of action research:

- Critical theory and changes in education (based on Freire's and Habermas' conceptual background);
- Critical environmental education towards social justice and ecological citizenship (based on Huckle's and Fien's conceptual background);
- Environmental education and a need for a 'new culture of argument' (Freire's, Habermas' and Myerson's and Rydin's conceptual background);
- Environmental education from local problems to ecological citizenship (by Layargues' and Reigota's conceptual background).

Action research involved a 'spiral procedure' where as a result of their scheme the participants introduced a change in their practice and observed the results. After each cycle of the action research process – planning, acting and evaluating – the participants collaboratively built up a set of data. Through this process the teachers could continuously evaluate their difficulties, satisfaction, failures and success in theoretical and practical terms.

The researcher followed most of the environmental education activities which were carried out by teachers at their schools and in the community. In fact, the researcher paid more than 80 visits to the four schools to plan and observe the teachers' classes and evaluate their activities. Although this was exhausting, the researcher was extremely satisfied with the teachers' commitment and willingness to discuss and develop their proposals during the research. However, a number of drawbacks arose during the teachers' activities which were as follows:

- shortage of time for teachers to carry out the project
- lack of financial resources to put into effect some of the teachers' ideas
- some cases of teachers being absent during the group meetings
- some traditional pedagogical practices which can retard or impede emancipatory actions on the part of the teachers .

The participants in the second workshop discussed both the positive and negative results of the implementation of the action research.

#### **5.7.4 The second workshop – the evaluation of the action research process**

The purpose of the second workshop was to evaluate the results of the professional course of development undertaken by the teachers during the research. By means of self-reflective enquiry, the participants analysed and evaluated their practices and examined the impact of the action research on the process of teaching environmental education. In essence, this workshop was considered as an important part of the research as it discussed the effects of the implementation. The main goals of the workshop can be summarised as follows:

- to encourage teachers to reflect on their environmental education practice and to undergo self-analysis as active agents
- to encourage teachers to analyse the teaching process used to promote the growth of environmental education linked with emancipatory actions and leading to ecological citizenship.

The evaluative analysis incorporated discussions on:

- environmental education goals and concerns based on critical perspectives
- environmental education as a possible way of improving students' critical thinking
- environmental education, social justice and ecological citizenship.

The second workshop took place on 29<sup>th</sup> October 2003 and the researcher and teachers divided it into two main parts as follows. All four schools attended the event. The main goal of the first part of the workshop was to prepare data, accounts and general materials for the evaluation phase of the research process by the participants. In this first part of the workshop, the teachers worked with others from their own school to prepare materials to give a presentation later during the second part of the workshop. The aim of the second part of the workshop was to involve the participants in reflecting on and evaluating the strategies and guidelines in environmental education used during their action research.

#### **5.7.5 Development of the second workshop**

As had been planned by the participants, during the first part of the day the teachers worked in their own schools preparing their presentations for the second part of the workshop. The teachers selected materials such as posters, photographs and reports. This procedure benefited the teachers by allowing them to work together again and share their findings and feelings about the enquiry. It should be noted that in general during all the cycles of the

research process, the teachers were collaboratively engaged, in accordance with the principles of action research. Nevertheless, the strategy of working together, and organising materials for the workshop, was a complementary activity designed to bring them closer together. Moreover, at the time of their presentations in the afternoon, teachers did not assume an individual posture with regard to the research practice. Instead of this, the teachers showed the results of the group work which comprised the experience of each individual shared and reflected by the group. For instance, a significant fact was that the teachers were able to connect their single project with those from other schools.

During the first workshop (undertaken on 5<sup>th</sup> February 2003), the teachers managed to carry out activities in the evaluative workshop of one of the participant's schools. The chosen school was the one located in the rural zone. The Education Department of the City Hall provided a bus to take the participants there. The host school prepared a suitable environment for the participants' accommodation and the development of the workshop. Resources such as pedagogical materials and staff service were provided by the school.

Before the teachers gave their presentations which were about their evaluations of the results of the research, a warm- up group activity was undertaken to stimulate the participants. This had a positive effect and led the participants to reflect on their practice. A teacher conducted the audience in singing and reflecting on education and the meaning of life. As was planned, the musical presentation provided the teachers with a special time to carry out a general revision of their ideas, understandings and actions. The songs and lyrics that were used to motivate the participants expressed feelings of renewal which affected people in their lives and practice. The performance brought together environmental issues with a feeling of equity.

The teachers' role during the group activity was in holding discussions on the activities carried out during the action research process. At the end of the activity, the teachers from each school gave their impressions on how they had progressed. They discussed their impressions in compliance with guidelines that included the following questions:

1. What are your main concerns about environmental education and its goals?

2. Did you come to realise that environmental education provides ways to improve the critical thinking of the students when it is based upon social justice and citizenship principles? In what ways?
3. What were the results of the research process? (Include both positive and negative aspects).
4. Please describe the resources you used and point out any difficulties you found during the action research process.

The researcher and teachers had discussed the questions above in each school before so that they could prepare a preliminary evaluation. This strategy helped the teachers a great deal in organising their presentations at the workshop. The presentations opened up and stimulated a debate on the pedagogical practices applied by the participants during the process. This led the researcher and teachers to reflect on the findings and results of the experiment. Positive and negative views were expressed which will be fully analysed in the subsequent chapters designed for this. The participants showed a strong willingness to display and discuss their work. In addition, during the debates, the teachers showed remarkable confidence and commitment, even when they pointed out obstacles and setbacks they had encountered during the process. In fact, the researcher also noted a very positive quality, the teachers' assurance and independent attitude when reporting their impressions.

The researcher considered that autonomy at the beginning of the action research was an essential criterion if the participants were to acquire emancipatory attitudes. The process of improving the professional practice of the teachers and empowering them to be more critical of their own practice will be analysed in future chapters. For the moment, it is enough to state that during the evaluation, teachers got involved in a complex process which gradually led them to acquire the qualities of 'independence, equality and cooperation' (Lewin cited in Carr and Kemmis, 2002:163).

At the end of the second workshop, the teachers prepared an exhibition of photographs and posters of their activities during the action research cycles. All the participating schools prepared materials for this exhibition. For instance, the teachers brought a selection of materials produced by pupils such as reports, texts and booklets. One of the schools



exhibited some toys made from recycled material prepared by children at school. In addition, this school exhibited data from the students' research which had been carried out in their communities into environmental pollution and health. The host school organised a short presentation by the children about their work on environmental issues.

At the end of the event, the teachers were invited to complete an evaluation sheet (see Appendix 5 for English and Portuguese versions) to assess the success of the workshops. The researcher asked the teachers to complete the questionnaire immediately after the event, and this was promptly done by 70% of the 40 participants. In the opinion of the majority of the respondents, the workshops were satisfactory in terms of the teachers' engagement as it led them to discuss and evaluate their practices. In addition, most respondents stated that the organisation of the workshops with regard to contents, time, and resources was satisfactory too. As well as this, all the respondents strongly agreed that the workshops were relevant to a good deal of involvement among the participants.

### **5.8 The analysis of the data**

In accordance with the principles of action research, the central analytical procedure adopted in this thesis when dealing with the data was to understand the process of analysis through a spiral or dialectical perspective. This means that the data was continually built, interpreted and revised depending on the way the action research cycles progressed. Hence, each cycle generated a set of data which was interconnected with the subsequent cycles of the enquiry. The use of a spiral approach to ground the analytical framework allowed data to be built up from particular to general contexts of the fieldwork. As a result of this, it was possible to obtain a detailed visualisation of the entire process of the research by means of a continual process of reflecting on and refining data. The participant teachers played a vital role in bringing this about.

Action research is based on an analytical approach which involves reflection and derives from the concrete social experience of the participants. Under these circumstances, the subjects involved in the research were considered to be key elements to the interpretation of the data: a central requirement to make sense of the data collected was the way the participants understood their pedagogical practice during the process of the research. This

characteristic of the analysis was a fundamental step towards prompting the participants to evaluate themselves as participative agents.

A range of combined methods and techniques was employed during the research to analyse the ways the participants assessed their performance during the enterprise (as described in Chapter 4). The analysis was conducted by combining data from different instruments such as semi-structured interviews, workshops, group meetings and participant observations. The data was assembled with the aid of transcribed audio taping, written reports, a researcher's field diary, project plans, researcher's notes, brochures and evaluation sheets.

The data was filed to correspond with the cycles of the research. The links created between each distinct cycle of the action research allowed the impacts of the whole research. This was possible because of the way in which the instruments of the research were employed during the process. The data collected from distinct phases of the interviews, one undertaken at the beginning and another at the end of the research, were compared and analysed to identify the teachers' preliminary ideas and their later ideas. At the same time, the data from participant observations was collated and interpreted from the initial to the final research cycles. In addition, data from two workshops – introductory and evaluative – and group meetings was put together to find out the extent of the impact of the implementation. Finally, the whole data was synthesised through a comprehension of the multidimensional aspects of the phenomenon. This procedure was very intensive but extremely positive as it allowed the researcher to identify important insights for the research regarding evidence of the way participants had managed to enhance their environmental education practice.

The data was organised through three main procedures: description, classification and interpretation. During the *description* stage, the data from each distinct cycle was manually arranged into separated files and subsequently transcribed from Portuguese into English. With regard to the interviews, the transcriptions were filed in accordance with the responses from each individual teacher, their respective school and phase of the interview. To maintain the anonymity of the participants, each teacher was codified by a number (e.g. Teacher 1, Teacher 2, etc.) and the schools by a letter of the alphabet (e.g. School A, B, C and D). At the same time, the data from the participant observations classified each school

event (classes, exhibitions, lectures, contacts with the community) and observed situations (conflicts, co-operation among teachers). Similarly, records were kept of the two workshops and group meetings together with teachers' projects, teachers' reports and materials produced by the participants (photographs, posters).

During the *classification*, the data was systematically reviewed to select the main findings. At the same time, the researcher examined the interview data to find out what the ideas of the principal teachers were. The researcher sought to focus on finding the key ideas that arose from each teacher interview, in each distinct phase of interviews. At the same time, she was aware of the need to record any different, similar or contradictory opinions that arose from the interview responses which might be relevant evidence for the thesis. In the same way, the researcher focused her attention on the records of participant observations, workshops and group meetings. All the written reports, project plans and diary notes were reviewed. Gradually certain themes emerged in accordance with a selective group of ideas. These ideas were grouped into categories of analysis depending on their conceptual ordering, dimension and properties. The whole set of categories from the initial to final stages of the action research were interrelated and compared thus forming a logical system of conceptual statements. For instance, the core categories which were obtained from the teachers' conceptions in the first cycle of the research, (such as environmental education related to conservationist orientations, the marginal position of the curriculum, and fragmented pedagogical practice (see Chapter 6), were connected with the teachers' ideas in the subsequent cycles of the research (see Chapters 7,8 and 9). This means that the data was compared by attempting to absorb the main significance of the teachers' evaluations throughout the process concerning the changes and empowerment experienced by those involved in the enquiry.

The *interpretation* of the data used in this thesis enabled the researcher to relate and form concepts by explaining and evaluating the results, (re)structuring the arguments and theorizing from different angles. The process of reflection permitted her to generate interpretations and meanings to make the data intelligible in the form of a theory with a logical and explanatory scheme. This was possible through a creative and permanent process of constructing knowledge which was based on the interconnection between the theory and practice employed during the whole process of the action research.

Thus, the process of analysis of this thesis emerged from a complex and interrelated cognitive process which incorporated action – reflection – action through a perspective of praxis. Because of this, the technique of interpreting and understanding the data by the participants was not phenomenological or subjectivist as is the case with interpretive approaches (see Table 4.1). Rather, it was governed by social and political dimensions from concrete educational situations experienced by teachers at schools (Carr and Kemmis, 2002) and their drive towards emancipatory actions in each cycle of the action research. This rationale supported the analysis of the findings which employed the scientific criteria of validation of the action research data.

The validation of the data was effected in three main ways: face validity, construct validity and catalytic validity. According to Hillcoat (1996) the first consists of continuously reviewing the findings of participants through the cycles of action research. The second comprises the on-going reflective construction and extension of theory which is enriched by the experiences of peoples' lives. In the case of this action research, the review of the findings through a systematic reflection was continuously pursued during the whole process (as described, for instance, in Section 5.7.3). To this extent, the critical evaluation process undertaken by the participants resulted in the reformulation of the plans, actions and analysis of pedagogical practice. The third way – catalytic validity – involves the capacity of people to change their behaviour through participant reflection during the process of the research. The criterion of catalytic validity attempted in this study was maintained through a continuous evaluation of the activities carried out by the participants and aimed at bringing about changes in the performance of the teachers concerning their pedagogical practice.

As outlined by Carr and Kemmis (2002), critical theory presents a dialectical view of rationality in which the findings are not considered as “phenomena by analogy” (2002:180) compared with other objects from the physical sciences. Rather, in critical theory findings are interdependent parts of the researcher-practitioner's everyday practice. Thus, the validation of data in critical analysis does not incorporate the same validity claims endorsed by empirical treatments. In this sense, critical research entails “validation within its specific context” (Hillcoat, 1996:153) and it is endorsed by a view of truth as

socially and historically constructed through human participation in communicative frameworks. In critical action research, the validation of the data is constructed in the context of the research. In practical terms this implies a need to understand participants' involvement as a fundamental ingredient in the process of research.

In this research, teachers' participation concerning face, construct and catalytic criteria were essential requirements for the validity of the data interpreted within Habermas' theory of communicative action. From it, communicative practices assumed by the group of teachers gained a special meaning since participants were not static components; rather they were collaborative agents who interacted in inter-cognitive processes. For Habermas' theory the communicative practices are constitutive of the 'lifeworld' which incorporates empirical, social and subjective dimensions (see Chapter 3.2). As outlined by Grundy (1996), the process of validity claims based on the communicative practices as postulated by Habermas' theory requires participants' cognisance with regard to these three spheres of the 'lifeworld' for the validation of the data:

Firstly, with respect to the empirical world, statements need to be able to make claims to 'truth' on the basis of empirical evidence. With respect to the inter-subjective [social] world of values, claims need to be able to be made that can be defended in terms of 'rightness' or 'appropriateness'. With respect to the subjective world, it is important that the speaker speaks 'sincerely' and 'authentically'. (Grundy, 1996:111)

It is important to say that within critical theory the 'truth criterion' posed as a validity claim is positioned in a different way when compared with traditionalist approaches. That is, in rejecting the positivist notion of absolute truths, critical theory supports the idea that there may be multiple truths that arise shaped by human praxis. In the same way, notions such as rightness and appropriateness go beyond a simplistic rationality in which the objectivity of the visible facts emerges as a scientific criterion for the validation of data. For action researchers, the comprehension of the criteria of rightness and appropriateness embraces social and historical conditions which are constructed by the subjects in everyday practice. A central requirement for this research was the establishment of validity claims able to make sense of findings in a pedagogical arena where teachers experienced reflection, debate and contestation. Thus, the idea of promoting a research setting able to give voice to the participants was undertaken so as to privilege teachers' use of argumentation through

principles such as sincerity and authenticity. In this sense, teachers' critical understandings about their own practice was prioritised as a key element during the whole process of research that encapsulated description, classification and interpretation of the data. The realisation by teachers of these dimensions during the process of this research lies at the core of Habermas' articulation of communicative competence. Through a systematic reflection which comprised different voices seeking evidences based on argumentation, the idea of communicative action was centred on the propagation of a culture of argumentation among teachers.

In conclusion, it is worth mentioning that the analytical framework set up in this thesis, apart from making sense of the data, assisted in the identification, development and (re)conceptualisation of relevant theoretical insights which can be found in the literature review (see Chapters 2 and 3). At the same time, it was possible to address and review the research questions outlined in Chapter 1. In fact, each cycle of action research was connected with distinct research questions which were drawn up for this thesis. During the action research, these questions were gradually defined and refined so that they could take into consideration a reflective process of enlightenment which was experienced by the researcher and the participants. The link between the conceptual approach and the main findings, as well as the research conclusions from the analytical process will be examined and discussed in the following chapters.

### **5.9 Conclusion**

This chapter has examined the development of action research and the main procedures used for the acquisition of data in this study. The chapter also provides a description of the participating schools, the pilot study, the methodology adopted, strategies, guidelines and a set of actions used during the implementation of the research. Finally, it briefly discusses the principal strategies used for generating, organizing and analysing data. Next chapter will introduce the main teachers' ideas concerning environmental education obtained from the first cycle of action research process.

## **Chapter 6**

### **Ways primary schoolteachers understand environmental education: an analysis from the first cycle of action research**

#### **6.1 Introduction**

This chapter addresses the first research question of this thesis: *How do teachers understand environmental education in Brazilian primary schools?* The question has been approached from a perspective that examines three main aspects of environmental education:

- Teachers' conceptions of environmental education
- Teachers' views of the environmental education curriculum
- Teaching practices in environmental education.

The chapter provides an analysis of the pedagogical and ideological contexts of environmental education from the perspective of primary teachers in public schools in Ponta Grossa, Parana, Brazil. The data were gathered from the introduction of the first cycle of action research which is supported by this thesis. In specific terms, this chapter aims at identifying the initial ideas of teachers about environmental education with regard to concepts, curriculum and practice in order to obtain a general understanding of the research field. In fact, the interpretation of these teachers' ideas was the first stage in the process of stimulating participants to reflect on their concepts and practice in the field of environmental education. For this reason, during the group meetings and the first workshop, participants were given an opportunity to discuss the work carried out on environmental education at their schools. Following these discussions, the participants drew up a general plan of research, which will be introduced in the next chapter. In addition, a strategic analysis was conducted into the ways the teachers arrived at their preliminary impressions of environmental education and how this compared with changes in the series that followed, before the effects of its implementation became apparent.

The ideas raised by teachers to conceptualise environmental education, curriculum and teaching practice were identified in accordance with the methodological procedures described in Section 5.8 of this thesis. The description, classification and interpretation of the data were based on a systematic examination of the ways teachers understood the issues

and were gathered from observations, interviews and group meetings, as well as reports of the first workshops which were held. These procedures allowed the researcher to obtain a complex set of findings which had a bearing on both particular and general aspects of the empirical fieldwork.

The analysis identified the main ideas of the teachers which were then summarised and codified into a number of categories (see Table 6.1). These categories refer to the conceptual orientations which were employed by the teachers to construct their comprehension of environmental education. The intention, therefore, is not to claim that the data in Table 6.1 present absolute, clear-cut categorisations. It is possible that another researcher could end up with a different classification and/or distribution of the teachers across the categories. Rather, the intention, using a 'broad-brush' approach is simply to show a) that the teachers have a variety of orientations; b) that these orientations probably differ in their frequencies with the preservationist and biophysical ones predominating.

It is important to observe that interpreting people's ideas is a complex process encompassing a range of different meanings which are grounded on individual experience and social contexts. Indeed, rather than being static elements in the world, people are subjects who are in a constant process of construction. Thus, they are able to interpret a single phenomenon in various ways depending on the historical situation in which they are 'inserted' at the moment when an interpretation occurs. For instance, in this phase of the research, the researcher observed that some teachers combined elements from different models (e.g. elements from both critical and romantic orientations) to conceptualise environmental education. However, although some of the teachers' ideas were open to mixed interpretations, during the coding process the researcher attempted to find out the predominant orientation used by each teacher to explain environmental education. This was possible through the analysis of data from different instruments (e.g. first interviews, participant observations and reports from teachers' practices) and distinct situations experienced by teachers at schools. The analysis enabled the researcher to identify and compare different segments of data so that a systematised set of conceptions for this thesis could be formed.



## 6.2 Teachers' conceptions of environmental education

A number of environmental orientations emerged from the conceptions that teachers had about environmental education, ranging from a preservationist to a socio-critical perspective. Even though some teachers believed that environmental education encapsulates social and political dimensions, preservationist ideas predominated in distinct ways. The following table illustrates the teachers' essential orientations with regards to environmental education:

**Table 6.1** The orientation of Primary School Teachers' within environmental education

Categories	Number of individuals per type 36 individuals	Percentage per type 100%
Preservationist orientation	16	44%
Biophysical orientation	12	34%
Emotional orientation	4	10%
Religious orientation	2	6%
Socio-political orientation	2	6%

- **Preservationist orientation**

A general interpretation of the data suggests that there is a view which is widely held by the participant teachers regarding environmental education. This is based on a causal relationship in which environmental crises emanate from human actions. In other words, in the opinion of most teachers, environmental problems are the result of a generalised, reckless exploitation of natural resources. This view has led to the setting up of education for conservation as a crucial strategy in the prevention of environmental destruction. Thus, environmental education has emerged as a real opportunity to provide students with the knowledge and skills required to preserve natural resources. In general, these teachers valued environmental education as an important mean of achieving a better quality of life for their pupils. However, their attitudes to the question of the quality of life was backed up by ideas about the correct use of natural resources and changes in students' lifestyles, rather than being linked to the inherent contradictions of industrial society. As a result of this, environmental education was regarded as being a pedagogical means of fostering changes

in student behaviour and also as being centred on preservationist orientations. The following statements from interviews illustrate the main ideas of these teachers:

I understand environmental education as being the relationship between a person and the environment. It is the way someone coexists with the environment and involves human beings as well as mineral and plant forms. Environmental education has to do with coexistence within the environment to the extent that the individual feels comfortable in it and does not disturb or cause damage to his own specific surroundings. I do not know if I am making myself clear but for me this means making the children become a part of the environment, that is, to be aware of what they can do for the environment and what the environment can do for them. For example, environmental education should study the effects of pollution and how these affect children's lives. (Teacher 7, School A, first interview)

Preventing people from cutting down trees and throwing their rubbish onto the streets is a way of educating people. I think that this is what environmental education is! (Teacher 3, School B, first interview)

Environmental education is a kind of re-education which enables us to live in the world where we are. In the past, people thought they had everything for free and resources were endless. Now they have discovered that their resources are coming to an end and thus they must learn to live with this. In the case of children, environmental education is something they must learn while for adults it means being re-educated. It is necessary to study environmental issues and also the human side of each individual. It is also necessary to deal with issues related to human consumption. (Teacher 7, School C, first interview)

Today, we are suffering the consequences of what our ancestors did. I mean they failed to preserve the environment. For this reason, environmental education must make children aware of the importance of preserving the environment. (Teacher 3, School D, first interview)

As well as this, some teachers emphasised the idea of consciousness which they considered as an essential prerequisite for creating a more balanced environment. They also gave priority to environmental education and the need to increase pupils' knowledge of the disastrous consequences of the destruction of nature. In this way, 14 out of the 36 teachers supported the idea that environmental education should foster awareness to protect and improve the environment. An important point arose from these teachers' views which is that environmental education should provide an opportunity to create new ways of proceeding which can be conveyed to children. This is discussed further in Section 6.5 of this chapter. For the time being, it is sufficient to point out that the perspective assumed by

these teachers suggests that discourse and conditioning are powerful means 'of shaping' pupils so that they are aware of the need to preserve nature both now and for future generations. Moreover, it suggests that environmental education tends to encourage students to adopt particular and mechanical types of behaviour rather than providing them with the knowledge and skills required to interpret and solve environmental problems.

On several occasions when the researcher had the chance to observe the development of environmental education at schools, it was clear that it was undertaken by means of a transmission of principles and postulates rather than by sharing ideas. It was not uncommon to observe that some teachers preferred to organise environmental education activities in which factual knowledge was imposed on the pupils and derived from abstract problems, rather than engaging pupils in problem-solving. Indeed, some of them simply presented lists to students about what is "correct" and "incorrect" in relation to environmental issues. The question which arises here does not lie in the use of this activity in itself but in the way that it was imposed on the students. In other words, there were no critical discussions with the students with the aim of allowing them to reject or modify these "correct" or "incorrect" notions; they simply had to accept them as true. An example of this occurred during a group meeting when a teacher told the group that she was going to examine the topic 'Water' with the students. Her aim was to raise the students' consciousness of the importance of water for people and suggest strategies for avoiding unnecessary waste. She raised some practical ideas for her pupils to consider, such as the importance of saving electricity and water. After that, she explained to her students the importance of the topic, and asked them to observe if there were any dripping taps or leaking showers in their homes and so on. The problem was that most of her students did not have electricity or even showers and taps in their homes. These children have to obtain water from a river in the neighbourhood. However, it should be noted that the teacher displayed honesty in the way she introduced this situation to the group, as well as her willingness to evaluate and reconstruct her pedagogical environmental education practice in the subsequent stages of the action research.

During the first workshop session, the idea of consciousness raising emerged as an important element in the preservation of nature. Observation made it apparent that a central concern regarding environmental education is that it should be based on the creation of new

patterns of behaviour as was supported by some of the teachers. The researcher's notes from her observation of the first workshop is an example of this:

... most teachers reported that they carried out environmental education which was centred on 'virtuous behaviour' to raise the students' consciousness. In their view, children should be taught to be 'good citizens' and teachers are subjects of crucial importance in this process i.e. they should be 'good models' for children since at home many parents are not. (Report from the 1<sup>st</sup> workshop on 05.02.2002, researcher's field diary)

#### • **Biophysical orientation**

In a similar vein, but in a more sharply-defined way, twelve out of the 36 teachers conceived of environmental education as being strongly focused on biophysical interpretations of the environment. In their opinion, environmental education values were visibly embedded in a naturalistic orientation of nature and environmental problems. It seems appropriate to mention that, although there is some conceptual proximity between preservationist and biophysical orientations, both being oriented through a specific interpretation of the environment, for the purposes of this research a conceptual distinction between these two categories can be drawn. A preservationist orientation refers to the teachers' emphasis on the need for protection of environmental natural resources, ecological systems and the future of the planet, whereas biophysical orientation is related to the ways teachers understand environmental education when it is focused on human physical conditions such as healthcare and body care.

During the development of the first workshop, many teachers' accounts supported the position that environmental education is related to health and body care. In addition, when on the researcher's first visits to schools, it was usual to observe environmental education issues carried out by teachers being linked with personal body care. On many occasions the researcher noticed that the materials produced by the teachers and children were related to body care and hygiene practices. It was frequently observed that a connection was made between environmental issues and concerns about maintaining a clean environment at school. The following are some examples of the teachers' concerns which were gathered from interviews:

Environmental education refers to the environment where we live; for instance, our house, our school and our neighbourhood. Environmental education is related to everything in our lives, from personal physical hygiene and house cleaning to the air which we breathe and plants. (Teacher 4, School A, first interview)

[Environmental education] is making students realise that if they throw a paper away they are making a mistake that they are damaging and polluting the environment where they live. So it's necessary to make children aware that the cleaner the environment is the better it will be for them and for their health. (Teacher 2, School B, first interview)

For me, environmental education should start with body care [hygiene]. Following this, it should deal with the environment where you live, for example your home, the classroom and the outside world. All these things are part of the environment. (Teacher 1, School C, first interview)

Environmental education is related to people's health. It is necessary to live healthily. If there had been more care before ... today, there wouldn't be the hole in the ozone layer and pollution everywhere ... So environmental education's main goal is to help to keep people healthy. There is no other goal. It must exist to help human beings to live well and healthily. (Teacher 1, School D, first interview)

In contrast, for four out of the 36 teachers, the development of environmental education only based on health and hygiene precepts represents a discrepancy in terms of pedagogical concerns and the pupils' real social conditions. That is, these teachers support the idea that environmental education can become a way of reproducing socio-cultural patterns which are often different from the students' real world. The researcher's observations have borne out how drastic have been the consequences of this on teachers and children. In the case of the latter, it represents a cultural clash between what is taught at school and the real socio-environmental conditions of the children. In the case of the teachers, it has given rise to a number of pedagogical barriers at school. For instance, reports from both the first workshop and visits to schools revealed that teachers frequently complained about their difficulties in teaching environmental education. The main complaints of the teachers were usually based on the idea that the pupils constantly ignore their teaching. The fact is that the minority of the teachers assumed that children do not always have the same material, social and cultural conditions as their teachers do.

However, some teachers did understand these cultural and social differences and the difficulties faced by children. They asserted that the uncritical acceptance and transmission of certain kinds of values by teachers can (re)produce and perpetuate the imposition of

some discriminatory practices of social control at schools, particularly in the area of health care and notions of hygiene. As one teacher put it:

...I have students who do not have a shower because they have no water. They live near the stream but the water they use is contaminated by sewage waste. You tell them: "You have to wash yourselves" or "You must do this, you must do that", but the question is "How?" What social conditions do these pupils live in? What kind of basic sanitation do these pupils have? And in the classroom you tend to present a set of norms and social rules they have to follow to live in society. (Teacher 7, School B, first interview)

The following teacher reached a similar conclusion:

...Environmental education concerns should be focused on reality, on students' life, and correspond to their real circumstances ... so that they can apply it to their lives. (Teacher 1, School A, first interview)

#### • **Emotional and religious orientations**

This study also identified two other categories regarding teachers' ideas about environmental education. According to the participant teachers, these ideas correspond to the emotional and religious dimensions of environmental issues. Both ideas were associated with romantic and harmonious views of the environment as a mysterious, beautiful and sacred place. Hence, some teachers thought that environmental education concerns were characterised by a spiritual and devotional attempt to achieve a peaceful relationship between nature and human beings. In this scenario, the focus of environmental education was geared towards the preservation of the natural environment and encouragement of human respect and dignity based on naturalistic principles.

In fact, the idea of 'nature as something divine and beautiful' which was outlined by the teachers depicts the environment as a spiritual place of leisure and entertainment. It was not uncommon to observe a predisposition on the part of teachers to carry out environmental education by paying visits to ecological parks or nature reserves in order to contemplate nature. Examples of this are given below:

As the environment is a part of life, human beings must love themselves first. The process of raising consciousness starts with the individual being able to love others and

to love nature. Because, if I love myself, if I have feelings, if I realise I am a human being, I will be more aware of the world where I live, from the moment I am conscious of it. I will realise that nature suffers. I will know that if I destroy a plant or a tree, I will not derive pleasure from doing so ... because I will suffer the consequences. For example, God gave us pure and clean water. But what has happened? Human beings pollute it, but who is causing this harm? (Teacher 9, School A, first interview)

Environmental education is about teaching people how to respect the environment where we live. Even to respect people. It means respecting trees, animals ... the whole ecosystem. Everything associated articulated with human beings, hygiene ... respecting people and nature. (Teacher 10, School B, first interview)

[Environmental education] ... should promote peace and health ... this is a subject of environmental education. (Teacher 3, School C, first interview)

Environmental education should seek harmonious relationships between all species in the environment. (Teacher 4, School D, first interview)

In contrast, it is important to observe that many students from participant schools are living in poor environmental conditions and these children are facing daily environmental problems such as starvation or a scarcity of sanitary services. Nevertheless, the researcher found that there was a widespread inclination among teachers to highlight the fact that environmental education is a subject which reflects strategies for observing nature as a place of meditation or tourism. Despite the importance and pleasure of visiting parks, nature reserves and zoos, the researcher observed inadequacies in the teachers' recognition of students' real needs, as far as environmental issues are concerned. Their views clearly reflected an idealistic interpretation of nature which failed to recognise the environment as a social and political structure constructed by human praxis.

- **Socio-political orientation**

Another view of the environment on the part of teachers was identified and categorised during the analytical process. This view refers to a less restricted view of nature and focuses on a socio-critical orientation of environmental matters and environmental education. In the view of these teachers, the explanation for ecological crises transcends mere technical explanations – where environmental problems arise from individual matters such as lack of knowledge about nature or poverty. Rather, it is centred on critical orientations in which environmental problems emerge as the result of social, economic and political exploitation. In the light of this conception, environmental education emerges as a

broad concept which encapsulates social values, historical changes and ecologically sustainable ideas. The following statements from the interview data illustrate this:

Environmental education is linked to all kinds of life and does not just refer to the external environment or the preservation of forests and rivers. Environmental education is related to the respect we must have for our food, our bodies, and the environment where we live. Environmental education is related to everything that somehow contributes to people's quality of life. For example, in order to have a good quality of life it is necessary to eat healthily – and this is directly related to environmental issues. Environmental education is linked to the food production issue – the use of pesticides, the food that is wasted, the non-consumption of food and even food hygiene. The clothes we wear are related to environment issues, that is, the kind of clothes we are wearing. Are they made of synthetic or natural material? The pupils' notebooks are part of an environmental resource. The way pupils use their notebooks reflects the education they have had. In my opinion, environmental education is wide-ranging because it involves the whole of a person's life, both at school and in society ... Everything is a question of attitude and reflection ... In general, everything said here meets the targets of environmental education. The objective of environmental education is to promote self-sustained education – it is to promote a life that is both self-sustained and self-sustainable. (Teacher 7, School B, first interview)

I wonder if environmental education refers only to the preservation of nature? I think it goes beyond that. In general, environmental education involves issues related to the quality of life ... Hence, it does not only refer to environmental preservation, but is more wide-ranging. In my view, people misunderstand environmental education. They confuse it with recycling. Environmental education is not only this but also involves many other factors, such as social and cultural issues... (Teacher 6, School C, first interview)

From this perspective, environmental education should be based on ethical and social principles which can lead towards a more equitable society. For this reason, environmental education must attempt to increase critical understanding of environmental problems through a concrete interpretation of the real problems faced by students in their local communities. While visiting schools, the researcher observed some pedagogical strategies which were used by these teachers to connect environmental subjects in the curriculum with the students' real life and which involved a political struggle to bring about changes in their lives. These strategies were carried out by means of a critical dialogue and involved teachers, parents and children who undertook to help pupils and parents to understand themselves and their social conditions in the context of their society. One example of this



was these teachers' initiative to invite parents to school to discuss the environmental problems that the community faced, with the aim of improving their quality of life

### **6.3 Teachers' views of the environmental education curriculum**

The parameters of Brazil's new curriculum provoked both positive and negative reactions among the teachers in their understanding of it. However, despite these divergences, there was a general consensus about the question of developing the curriculum in at least one area. This is that it represents an unattained educational objective, although environmental education has been officially recognised as one of the five cross-curriculum subjects – following the publication of the National Parameters for the Curriculum (NPC, 1997). The teachers believe that, if, on the one hand curriculum for environmental education has made significant progress, on the other it is far from being effectively implemented. In fact, the status of environmental education in the curriculum is an important subject affecting all the teachers who are participating in this research and it requires a lot of effort from educators, government and society to ensure that it becomes a part of our culture. In general, teachers stated that the statutory character of the NPC (1997) represents recognition by social and educational authorities that environmental problems need to be regarded as a prominent subject in schools.

With regard to the dominant preservationist conception of environmental education, discussed in the preceding section, most teachers thought that the new curriculum represented an opportunity to strengthen the responsibility pupils have to protect and improve the environment. From a different perspective, the idea of promoting environmental education focused on the formation of a more environmentally sustainable and equitable society (NPC, 1997:53) was cited by two out of the 36 teachers as being a crucial step forward for creating better conditions of life for people and furthering citizenship. These teachers claimed that the introduction of the new curriculum was a serious attempt to seek a better quality life for students through environmental education.

Some teachers mentioned the inter-disciplinary feature of the curriculum so that environmental issues could be linked with other subjects such as Mathematics, Portuguese or History. For some of them, environmental education was not evolving into a separate

subject, but rather, in pedagogical practice, was treated as an inter-disciplinary ingredient. The following statements exemplify some of these ideas:

I have tried to work according to the NPC. It is great. The teacher must be conscious that the NPC must be put into practice ... Taking care of the environment is part of citizenship ... In my opinion, this programme is very good... what happens is that often the teacher does not know the programme or does not work in accordance with it. (Teacher 5, School B, first interview)

I always try to link the contents of environmental education with other subjects. (Teacher 7, School B, first interview)

I think that the contents are wide-ranging, that is, ... everything is related to the environment. It also depends on the teacher's ability to develop [environmental topics]. Environmental education should be combined with other subjects ... It depends, therefore, a lot on every teacher's personal organisation. (Teacher 3, School D, first interview)

In addition, the flexible design of the Brazilian curriculum was a central and controversial issue, as could be gathered from 16 out of the 36 teachers' descriptions of environmental education. These teachers supported two main positions in relation to the flexibility and openness of the curriculum. In the opinion of eight out of these 16 teachers, the new curriculum incorporates subjective characteristics in which environmental education depends on the teachers' personal willingness to decide whether or not to encourage a significant practice. These teachers assumed that curriculum development cannot be restricted to individual criteria to interpret and control the content; rather, it must be focussed on a logical and standardised sequence of subjects. In contrast, eight out of these 16 teachers valued the openness and autonomy of the curriculum as a motivation for them to become more creative and self-confident in relation to their teaching practice. They thought that the flexible design of the Brazilian curriculum offers opportunities for interacting with different matters during the lessons. This suggests that, in opposition to the idea of subjectivism, the curriculum is not a neutral or an isolated element in the social and educational context but has multidimensional orientations and it is based on ideological considerations as shown by the following statement:

It all depends on the way the teacher organises it. You can only do the basics which are proposed in the programme, or else you can expand it. Whether or not teachers want it,

their training as professionals and their vision of the world is implicit in the way they work. Nobody can exist without an ideology. (Teacher 7, School B, first interview)

This interpretation implies that the way teachers organise the curriculum depends on their understanding of social relations. That is, the curriculum cannot be conceptualised without taking account of the teachers' role in affirming or refuting specific values. The teachers' interests have an impact on the formation of trends in environmental education and consequently on everyday pedagogical practice. However, the interests of the teachers are not unconnected with a considerable amount of educational and ideological guidance which reproduces and renders legitimacy to certain kinds of pedagogical values and practices which are upheld by schools. This means that although environmental topics were considered to be important, usually the assessment of the performance of teachers is not based on the satisfactory progress made by pupils in environmental education. Instead of this, the professional success of a teacher is assessed in terms of the students' attainment of good results in Portuguese language and Mathematics. The statements below provide an example of this:

I've examined the new curriculum guidance, but I wasn't interested in the subject of environment. I've concentrated more on Portuguese and Mathematics guidance because it is on these subjects that the teacher should pay more attention every day. (Teacher 1, School C, first interview)

I've worked very little with environmental education until now. I've got good material about environmental topics but the time was short. I couldn't explore the theme more deeply ... because the school in which I used to teach last year [not the current school B] insisted that the subject be terminated. (Teacher 10, School B, interview).

The researcher observed on her visits to the schools that difficulties faced by teachers in the promotion of environmental education were normally relegated to a marginal position when compared with problems arising from other disciplines in the curriculum. This suggests that despite all the efforts made by the teachers, it is often the case that environmental education is only paid lip-service to at schools but in everyday practice treated in an off-hand manner. During the first workshop, the teachers' accounts showed that they have often been teaching environmental education more by 'self intuition' than by focusing on a coherent methodology within a systematised framework. For instance, they insisted that the teachers'

lack of knowledge of environmental education resulted from a lack of training. This was supported by 12 out of the 36 teachers involved in the research as being the main barrier to the establishment of a good environmental practice.

Finally, another area examined in the teachers' interpretations of the environmental curriculum referred to the difficulty that exists in connecting theoretical and practical aspects of the curriculum. In fact, 12 out of the 36 teachers pointed out the gap between theory and practice of the curriculum during the interviews. These teachers argued that the new environmental curriculum is satisfactory in theory, but unworkable in practical terms. Consequently, these teachers felt that there is a theoretical fallacy underlying environmental education curriculum because it contrasts with the actual situations experienced by teachers at schools. The following examples give evidence of this:

I think that the discussion about the environment [environmental education curriculum] is more to do with the 'media', but we lack concrete projects. (Teacher 1, School A, first interview)

I think everything is easy theoretically speaking. The paper accepts all we put in it ... In theoretical terms the curriculum is very good. However, it is only applicable to some school situations, and not to others ... In some schools, it is unsuitable to apply the curriculum statements. (Teacher 4, School B, first interview).

The gap between curriculum theory and practice as interpreted by some teachers is related to the idea that practical contexts are different from theoretical contexts. This assumption, however, needs to be reviewed through two different perspectives. On the one hand, the dissatisfaction with curriculum theory expressed by some teachers entails a rejection of some of the centralised practices of government agencies when they draw up guidelines on educational issues. The teachers' complaints were based on the idea that they are often recognised by policy-makers as only being 'practitioners' in the educational context. As a result of this, in the teachers' analysis of the curriculum a distinction was drawn between those who plan the programmes and the curriculum, and those who put it in practice within the framework of an important political dimension.

On the other hand, the problematic issue of the separation between theory and practice raises a serious epistemological issue which undoubtedly poses a challenge to the

educational sciences. In fact, this separation is related to the way teachers interpret educational phenomena - in this case environmental education - and then take action. This results in a fragmented and empiricist practice based on common sense and the need for immediate results. Nevertheless, putting the environmental curriculum into effective practice is not an easy task because it is met by a complex set of difficulties which are experienced by teachers every day. As Harvey (1998) says:

“... environmental issues must be taken seriously. The only interesting question is how to do so.” Harvey, 1998:1)

On the basis of Harvey's statement, the purpose of the next section is to discuss how Brazilian teachers have been developing environmental education in everyday practice.

#### **6.4 Teaching practice in environmental education.**

The results of the analysis of the data revealed that most teachers tended to regard environmental education as a necessary subject. In the light of the statutory character of environmental education in the Brazilian curriculum and the increasing recognition of the relevance of environmental issues in the last few years, all the participant teachers of this research have supported implementing environmental education in schools.

The investigation found a number of ways used by teachers to put environmental education into practice; these are based on different perspectives ranging from restrictive to multidimensional approaches. Taking into account that, in general, teachers have interpreted environmental education in the school curriculum through preservationist and biophysical orientations, most practices experienced at schools have focused on reductionist interpretations of environmental problems faced by the world. Frequently, the real problems which surrounded the school were disregarded by the teachers in their pedagogical practice. As a result, environmental education practice usually emerged as an end in itself. It was confined to strategies to stimulate students to acquire knowledge such as garden techniques or visiting and appreciating ecological reserves.

The researcher often noticed a tendency on the part of the teachers to carry out activities with students involving recycling of materials. However, most of these activities were

limited to encouraging students to bring materials to schools in order to send them for recycling. Only rarely did the researcher observe some practice in which the topic of recycling was connected with ecologically sustainable values such as the effects of an excessively consumer-led society. For this reason, the practice of recycling which was organised more as an end in itself rather than a means of heightening awareness of ecological patterns, was, in effect, stimulating consumption among students themselves. In addition, it should be pointed out that many students and their families because of their extreme poverty live off the collection and sale of recycled materials. As a result of this, a contradictory situation emerged at the schools: a segregation between 'those who produce rubbish' and 'those who depend on rubbish' to survive economically. A failure on the part of teachers to realise this was observed by the researcher during the initial phase of the research and was widely discussed with them during the subsequent cycles of action research.

Another important factor was the identification of environmental education practices which were designed to shape students' behaviour so that they could learn how to use natural resources properly. In this way, environmental education was often employed by some teachers as a pedagogical means of helping students to learn to become 'good eco-citizens' (Marsden, 2001). However, the learning process was centred on the creation of standardised behaviour through a corrective process rather than fostering a critical understanding of the real need for environmental care. The following statement exemplifies:

If children are accustomed to throw rubbish into the stream ... they should change their habits... they should behave better. For instance, I deal with recycling, so children are accustomed to separating their rubbish. In contrast, for instance, their parents don't do so because they aren't used to it. (Teacher 11, School B, first interview)

In general, most teachers at the start of the research seemed to be unaware that environmental education could provide an opportunity to provide participatory education in citizenship. By and large even at those schools located in areas of pronounced poverty and with serious environmental problems such as the absence of an efficient sewerage system or high levels of pollution, environmental education was taught by teachers through a contemplative perspective of nature. It is important to note here that during the first workshop teachers noticed that students frequently dealt with health problems because of

the environmental conditions in which they live. Despite this, the teachers pointed out that there was no initiative from the teachers on how to tackle these problems. The statement below illustrates that on many occasions teachers recognised environmental issues as being of great concern but that the environmental problems experienced by pupils are often intentionally neglected during classes.

In general the students are very poor. Environmental problems affect their lives. I've never been to my students' homes but I know, because of some of the students' comments about their social situations. I can see that children are not healthy and that they lack food ... Often during the classes I avoid discussing some issues [e.g. children's social conditions] in order to prevent the children from feeling embarrassed. (Teacher 7, School A, first interview).

In contrast, some of the teacher's own practices revealed a sort of social and political struggle towards ecological citizenship education and the encouragement of environmental activities involving the students' real lives. These teachers' practices, although in a minor scale compared with teachers' preservationist environmental actions, came out through the idea of increasing pupil empowerment, by means of a critical interpretation of environmental issues. These teachers' activities were planned to nurture students' skills so that they could participate actively in society and strengthen values such as ecologically sustainable activities and democratic participation. The teachers supported the need for ongoing involvement with the students' local communities in order to plan and implement projects related to their actual environmental conditions. The following extract from the researcher's report from the first workshop exemplifies the practice of some teachers:

School C reported an interesting example of environmental practice during the 1<sup>st</sup> workshop. The school was facing a persistent problem in relation to some students' environmental conditions. These children used to live near a polluted stream. Their houses were often flooded when the stream became full. One of the teachers concluded that this situation was socially unacceptable. This teacher organised an ambitious environmental education plan with the children. A meeting was held with parents and people from the local community and a decision was reached to write a petition demanding government action. The teacher and all the students went to the Council to hand in the petition in which the children demanded that a solution be found to their schoolmates' plight. After a few weeks the municipal administration came up with a solution to the problem. (Report from the 1<sup>st</sup> workshop on 05.02.2002, researcher's field diary)

Furthermore, the researcher observed some environmental education practices that were associated with the environmental problems faced by the community where students lived. With regard to this, environmental actions were developed as an opportunity to promote activities that were focused on citizenship values and participatory actions. To this extent, the researcher observed some level of environmental education practice concerning social participation between parents and people from the community.

## **6.5 Discussion**

The diversity of orientations supported by primary teachers in Ponta Grossa, Parana, Brazil regarding environmental education conceptions, curriculum and practice, (as outlined in the preceding sections), incorporated a wide range of ways of understanding the environment and society. However, it was not a complete surprise to observe that the teachers' ideas could be interpreted in a variety of ways, especially when they were guided by preservationist, biophysical and naturalistic orientations. Indeed, they are not peculiar to the participant teachers of this study but are illustrative of the different views of the world regarding environmentalism and environmental education practices. The way that the participant teachers form their ideas is not separate from the imposition of normative influences which have been given legitimacy in contemporary industrial society. Moreover, the specific nature of the views of these teachers cannot be interpreted in isolation from the general discourse which has been determined by a system of ideas which have been historically and culturally sanctioned by society.

Hence, reductionist interpretations of environmental education held by most teachers reported here are intrinsically sustained by key orientations concerning nature and society used to give legitimacy to hegemonic discourses and thereby reproduce dominant social structures. These orientations are embedded in the interpretation of nature and society regarded as dissociated systems in which structural problems were not taken into account in arriving at an understanding of environmental problems. Most teachers' discourses are derived from a simplistic rationality which is based on relational principles of cause and effect. Given this opinion, the teachers insisted that preservation is a central concern of environmental education practice. The environmental education supported by most teachers is extremely linked with 'precautionary actions' in relation to nature. At the same time,



their practice tended to reproduce particular values of the dominant society. These values stem from a mechanistic perspective which minimises the importance of the social relationship between humankind and nature.

In this respect, the environmental problems faced by children were understood by teachers as resulting from the students' disregard of nature. The myth that poverty leads to environmental degradation emerged as a response to explain environmental crises. The preservation of nature, in a manner that was dissociated from the structural problems of industrial society, prevailed as an essential element in carrying out environmental education. In parallel with these ideas, education for conservation represented for these teachers an important pillar to consolidate environmental practices which were guided by individualist perspectives of change. In practical terms, environmental education has emerged as a 'conditioning' system which has brought about an urgent reorientation of people's individual lifestyles in the interests of a more balanced environment. This has led to an inversion of recognisable meanings in these teachers' positions, in other words, an understanding of nature as a simplistic abstraction which is unattached to any social dimensions. This state of affairs is intrinsically related to the alienation process which segregates nature from humankind (see Chapter 3, Section 3.3).

Most teachers were convinced that the environment is closely linked with notions of health care and hygiene. In view of the poor environmental conditions of many students, the environmental education concerns centred on health care ideas are not unreasonable. However, the ideas of nature and the body outlined by these teachers show a construction of knowledge in which the biophysical aspect is completely separate from the social and ecological process. In other words, these teachers' ideas are constrained by a limited view of the human body in which it is simply portrayed as an attachment of physical parts. In this view, the human element exists in separation from nature. In contrast, for the purposes of this thesis, the body is understood as a social construction which goes far beyond physical dimensions. In fact, it encapsulates a complex process related to the way that people construct its relationship with nature. Harvey (cited in Lambert, 2001) supports this view when he states that:

... the particularity of the body cannot be understood independently of its embeddedness in socio-ecological processes. If, as many now argue, the body is a social construct, then it cannot be understood outside of the forces that swirl around and construct it. (Harvey cited in Lambert, 2001:7)

Important too was some teachers' view that the raising of consciousness is a fundamental goal of environmental education. However, despite the evidence provided by teachers that environmental education is a key instrument in the curriculum to increase pupils' interest in environmental issues, they failed to realise that raising consciousness is a complex process and includes emancipatory interests which are dialectically constructed in everyday practice (Habermas, 1983; Freire, 1993). Instead of this, the teachers thought that environmental education incorporated a disciplinary discursive feature in which students should assimilate environmental matters more through an indoctrination process than an actual comprehension of social life. This suggested that students were not recognised by teachers as subjects but only as mere recipients who must assimilate a number of rules which are often culturally different from their real conditions.

In contrast, as outlined by two teachers, the environment cannot be analysed in isolation from a framework which involves political, economic and social dimensions of nature and society. This interpretation conceives of humankind and nature from a multidimensional approach which has its roots in 'critical' ideologies (Fien, 1993; Carr and Kemmis, 2002). According to this perspective, nature is dialectically constructed from human praxis (see Chapter 3, Section 3.3) and ecological matters are intrinsically related to the way industrial societies have been historically organised. Contrasting with the conservationist orientations, it reflects a social and critical attitude towards environmental problems centred on the deconstruction of the dominant discourses of power relationships which are sustained by capitalist societies. In this sense, environmental education emerged in these teachers' view as a way to implement sustainability, social equity, democracy and citizenship through a participative and reflective process. In addition, environmental practice emerged as an activity that was rooted in the students' concrete experience and clearly geared towards their real needs.

It is not the intention of this thesis to restrict environmental thinking or teachers' understandings of environmental education by 'packing' them into bipolar theoretical

boxes: traditionalist and critical teaching. Equally, it is not the intention of this thesis to overemphasise the role of critical orientations as if they are always the sole and best positions to be adopted by teachers. This view would be disrespectful of the human mediation process and could lead to the practice of indoctrination. It is a procedure that would run counter to any attempt at making a dialectical interpretation of a social phenomenon. Moreover, it would contradict the main argument of this thesis which is that teachers should be considered as social agents who are able to make an effective construction of reflective thinking and engage in emancipatory actions. Rather, a coherent analysis involves a complex system where people, in this case teachers, can employ different meanings depending on the context where they are 'inserted'. In other words, if human creation is taken into consideration when one is attempting to understand ecological issues, people cannot be thought of as inactive elements but as dynamic subjects. That is, people are dialectically (re)constructed through their everyday practice. However, a distinction between these two principal ways in which to interpret nature – traditional and critical perspectives – is didactically useful in order to understand the teachers' approaches as well as the process of changing practice over the following cycles of the research.

In the light of the assertions made in the preceding paragraphs, this thesis supports the view that exploring teachers' understandings of environmental education was an important requirement of the first cycle of the action research which has been recorded here. This allowed the researcher to obtain a general picture of the empirical setting to justify and extend the teachers' professional development. At the same time, the researcher's acquaintance with the main teachers' ideas allowed her to identify some important foundations for the following cycles of this research. In this sense, the main theoretical and methodological implications of the findings for the following cycles can be summarised in the following recommendations:

- to improve teachers' theoretical background of environmental education
- to share teachers' reflections through a permanent process of theoretical enlightenment
- to stimulate teachers' self-reflection and autonomy on their actions in everyday practice
- to create opportunities for the encouragement of environmental education values which are centred on ecological citizenship and social justice
- to encourage teachers to stimulate their students into thinking in a critical way and taking emancipatory actions.

## **6.6 Conclusion**

This chapter has constructed a set of findings and discussions which are aimed at answering the first research question of this thesis. It has attempted to analyse the participant teachers' main interpretations of environmental education with regard to conceptions, curriculum and practice. It also stressed the importance and implications of the findings for the following cycles of the action research process which methodologically leads the production of this thesis.

## **Chapter 7**

### **Planning and acting environmental education: an analysis of the knowledge, skills and commitment required by teachers to promote ecological citizenship**

#### **7.1 Introduction**

Chapter 7 will examine the second research question of the thesis:

*What knowledge, skills and commitment do teachers display in the classroom when promoting environmental education for ecological citizenship?*

This chapter is focused on analysing the continuation of the first cycle of the research in which the participants worked out the general plan of their actions. In addition, an attempt will be made to examine the findings from the second cycle of the research in which the practical work was carried out. Thus, it aims at interpreting the way teachers construct their knowledge and improve their skills to plan, implement and monitor the stages and activities required for bringing about environmental education for ecological citizenship. The chapter will be divided into two main parts. The first part will focus on the process of improving knowledge, skills and commitment of teachers during both the planning phase and the period when the participants put what they have learnt into practice. It will describe the starting-point of the research and the main reactions of the participants when carrying out environmental education, while also taking into account their progress, difficulties and limitations. In addition, it will there be a review of the extent of the teachers' willingness to embrace and support the critical pedagogical purpose of the research. As a result of this, a number of factors required by the action research proposal will need to be examined, such as self-reflective evaluation, the ability to make decisions, and the degree of participation and co-operation shown by participants. The second part will be devoted to analysis and will include a discussion of the results of the investigation during these stages of the research and the implications of the teachers' outcomes for the following stages of the research.

At the beginning of the research, 36 teachers agreed to take part in the investigation. During the planning and acting cycles of the research, four teachers withdrew from the project: one retired, one resigned and two were on sick leave. This meant that 32 teachers carried out the research from the beginning to the end of the process. These teachers displayed different

levels of commitment when involved in the process and also showed differences with regard to their ability to improve their knowledge, skills and willingness to promote environmental education. During the phase of planning and acting, it was observed that the majority of the teachers recognised the importance of acquiring knowledge and skills to link pedagogical practices with students' needs and emancipatory actions. However, in practical terms the ways that teachers construct knowledge required for their practice differed between each teacher. Variations in systems of value and character traits make it perfectly natural that changes should occur in different ways and at different levels. In view of this, a range of different assumptions on the part of the teachers arose from the development of the planning and implementation of this action research at the beginning of the process.

The identification of distinct ways teachers have of enhancing knowledge, skills and dedication became possible through a constant interaction between the researcher and teachers during their professional experience. As discussed in Chapter 5, the researcher followed most of the activities outlined by teachers during the course of the research. This long-lasting engagement allowed the researcher to recognise a range of multiple perspectives. As a result, the researcher obtained a detailed account of the teachers' engagement in the process by maintaining continuous contact with them in the stages of planning, implementation and revision of their projects. These contacts and interactions with the participants allowed the production of a body of information that was of crucial importance in categorizing the process of teachers' practice. This information, which was obtained through continual participant observations, (as described in Chapters 4 and 5) was carefully classified from the outcomes that arose from construction of teachers' experiences during the planning and action stages. As well as this, the practice of the teachers was systematically described in the researcher's field diary and subsequently examined and evaluated by the participants.

The continuous contact between the researcher and the teachers allowed the participants to make sense of the principal findings obtained during the implementation of this phase of action research. In fact, the use of face validity (see Section 5.8) as a criterion for validating the data on an intellectual basis allowed an analytical framework to be formed which could enable the researcher to identify and review the main assumptions of the teachers

concerning the practice of environmental education. The continuous process of reviewing participants' reactions sanctioned the main findings, as will be explained and analysed in the following paragraphs. The continuous review of the study by the participants led them to apply the rational scientific criteria which are needed to assess research quality and effectiveness.

When focusing on the degree of involvement on the part of the teachers who are carrying out a piece of collaborative research, account was taken of variations of their growth in knowledge, skills and commitment in encouraging a critical environmental education. By understanding different ways of interpreting the environmental actions undertaken by the teachers, it was possible to construct an intellectual base to support reflection on the possibilities and limitations of emancipatory environmental education. Their interests, personal involvement and philosophical orientations when participating in collaborative research can explain the heterogeneity of the degree of engagement on the part of the teachers. Different results emerged from the participants' involvement in the study; these ranged from a greater willingness to join in a collaborative enterprise to a reluctance to share experience and knowledge. These variations can be observed by studying the different reactions of the teachers at the beginning of the process.

The study of this phase of action research was validated through the following criteria which were discussed by the participants during the first workshop:

- willingness to take part in meetings and oral discussions
- interest in carrying out their projects
- ability to review their actions
- self-evaluations
- autonomy and freedom to take decisions.

In the light of these criteria for evaluating the extent of the teachers' engagement in the process, it was possible to categorise their reactions into a system of analysis which took full account of important findings obtained in the research. This analytical procedure enabled the level of teacher engagement to be classified into three categories: teachers who showed little engagement, teachers who showed partial engagement and teachers who showed major engagement at the beginning of the process. The teachers were allocated to

one of these three categories on the basis of their capacity to respond to the criteria outlined in the preceding paragraph.

## **7.2 The process of raising teachers' knowledge, skills and commitment**

The links forged between the researcher and teachers at the beginning of the research were crucial to forming a methodology of action research. Although the experience of an action-oriented project was new for the participants, they agreed to take part in the project with enthusiasm. The cordial welcome the teachers gave the researcher helped the establishment of professional relationship at the outset of the enquiry which lasted to the end. Indeed, in the first contacts with teachers and during the formal interviews, the researcher observed that the teachers showed an interest in talking about the practice of teaching environmental education. The collaborative relationship between the researcher and the teachers, which was rooted in preliminary contacts, allowed the creation of a fruitful atmosphere for planning the main steps of the research. The impact of these relationships was reflected in the organisation of the first workshop which was held with a view to defining the parameters of the research and to planning the main activities of the environmental education programme. In methodological terms, the first workshop was a key event in constructing the operational bases of the research (as described in Chapter 5). By means of this, it was possible to create a group work situation where teachers could be involved in the production of a complex set of strategies for carrying out research.

Teachers collaborated in the organisation of the workshop and taking into consideration the collective nature of an action research project, their involvement was considered indispensable for the research. Thus, teachers' participation remained an important contribution when deciding necessary operational aspects of the workshop such as the choice of the date, the best place for the event and the drawing up of some parts of the schedule. Most importantly, the teachers also supported the setting up of a workshop as a means of debating crucial issues such as the concepts of sustainability and the links of ecological citizenship with environmental education. It was not by sheer chance that teachers suggested these themes; rather it was because these issues are incorporated in the Brazilian curriculum and most teachers had never had an opportunity to discuss these subjects before the action research.



In the workshop, the teachers worked together to identify their initial ideas, recognise the situation of environmental education in their schools and prepare a general plan for the research. In addition, it was through the workshop that the participants laid down the main guidelines of the enquiry and discussed the main objectives of the research. The aims of the teachers were based on issues recommended by the Brazilian National Parameters for the Curriculum (NPC, 1997) of environmental education for elementary schools. The curriculum is structured into three main areas: Cycles of Nature, Society and Environment, and Environmental Management and Protection. The topic 'Water' is linked with Cultural Diversity and Human Activities and has emerged as a vital issue in the curriculum. With regard to these topics, the curriculum is divided into complementary subjects that comprise a sophisticated set of contents related to a wide comprehension of environmental education that includes quality of life, sustainability and citizenship orientations.

A process for planning activities was put into effect by deciding on a topic for investigation for each school which teachers could manage to fit in alongside their classroom activities. The researcher's main idea was to stimulate teachers to implement activities which had an emphasis on fostering teachers' attitudes and values on the basis of a critical interpretation of environmental problems faced by students in their real lives. While in the workshop the teachers designed four main projects of environmental education which were designed to correspond to the reality of each school engaged in the research. The following schemes show the suggestions made by the schools for the research:

- **Project from School A**

*1- Theme*

Environmental education: rubbish recycling and quality of life.

*2- Teachers' description of the problem*

There is a lot of waste ground surrounding the school. In general, people tend to throw their rubbish away there when most of this rubbish could be recycled. Consequently, invertebrates such as cockroaches and scorpions constantly become a nuisance and source of trouble. Moreover, these fragile environmental conditions are a health hazard and cause diseases.

*3- Aim*

Maintain a clean environment around the school and encourage the recycling of rubbish.

#### 4- *Action focus*

Recycling of rubbish by the community.

#### 5- *Goal*

Leading students to understand the importance of a clean environment for people's health and the quality of life of the community brought about through rubbish recycling.

#### 6- *Strategies*

- Reflection and discussion with students during classes;
- Research by students about the quality of life;
- Production of a pamphlet by the children so that they can distribute it to the community.

#### 7- *Learning outcomes*

- Pupils' direct experience with recycling;
- Pupils' awareness of the need to maintain a clean environment.

### • **Project from School B**

#### 1- *Subject*

Environmental education and ecological activities: cleaning the stream.

#### 2- *Teachers' description of the problem*

Near the school there is a polluted stream used by many people to deposit rubbish. Last year teachers organised a small group of parents and people from the local authorities to clean it. A few months later the stream became polluted again. The idea is to evaluate the activities and re-plan the enterprise so that it involves every pupil in the school as well as the members of the community around the school.

#### 3- *Aim*

Involve pupils, parents and members of the community so that they can reflect on and act on the environmental degradation of the stream and its consequences for the population.

#### 4- *Action focus*

Motivation and engagement of the community to clean the stream.

#### 5- *Goal*

Encouraging pupils to understand why the stream is polluted and what people can do to improve the conditions of the stream.

#### 6- *Strategies*

- Discussions on the problem during class;

- Debate by students;
- Production of texts;
- Drama.

#### *7- Learning outcomes*

- Understanding by the pupils of the causes and consequences of the environmental degradation of the stream;
- Parents' awareness of their role in solving the problem of their local environmental conditions.

### • **Project from School C**

#### 1- *Subject*

Environmental education: valuing regional and local culture.

#### 2- *Teachers' description of the problem*

Until recently the school neighbourhood contained a wide range of fauna and flora. The depredation of nature through the idea of progress has brought about a complete change, not only to the landscape, but also to the cultural and social conditions of the population. The local community has experienced a range of problems, such as factory pollution, noise pollution, frequent traffic accidents and crime.

#### 3- *Aims*

Valuing the local environment and finding ways to recover the cultural features in the region.

#### 4- *Action focus*

Local environment and cultural features of the population.

#### 5- *Goal*

Encouraging pupils to view their local environment and their own culture in a critical way.

#### 6- *Strategies*

- Discussion and debates;
- Interviews by pupils with elderly people in the region;
- Collecting old photographs in the community;
- Students to take photographs of the current landscape;
- Exhibiting photographs at school, comparing recent and old times;
- Cultural exhibition at school: typical food, parties and dances, etc.

#### *7- Learning outcomes*

- Pupils' understanding of their local environment and culture;
- Pupils' awareness of the importance of finding solutions to environmental problems experienced in the community.

#### **• Project from School D**

##### *1- Subject*

Environmental education: promoting sanitary health conditions in the neighbourhood.

##### *2- Teachers' description of the problem*

Many children at school have been infected by serious diseases as a consequence of shortcomings of sanitary conditions in their local community.

##### *3- Aim*

Discussing the sanitary conditions with parents and people from the community.

##### *4- Action focus*

Improving sanitary conditions in the school neighbourhood.

##### *5- Goal*

Encouraging pupils and parents to reflect on their environmental conditions in order to bring about improvements in sanitation and health.

##### *6- Strategies*

- Visits to students' houses
- Participant observation by children of the surrounding environment of their school
- Production of texts by pupils on existing problems.

##### *7- Learning outcomes*

- Pupils' understanding of their sanitary conditions
- Pupils' activities to improve their health conditions.

The participants decided that, on the basis of each school's general project, each teacher should prepare a sub-project which could be put into effect by the pupils. In doing so, the projects of the individual teachers were planned so that they corresponded to the particular level of the pupils. The idea of planning a general project for each school seemed to the researcher to be very interesting since it could facilitate the collaborative involvement among teachers when carrying out their individual projects. The next step was to discuss their individual projects with the teachers. This was undertaken by means of individual

contacts with teachers and subsequently through group meetings in the schools. These contacts enabled the researcher to monitor the main steps of the participants at this stage of the research.

Most teachers regarded the introduction of a different conception of environmental education that embraced a critical revision of nature, society and education as a dynamic enterprise. Indeed, the chance to carry out a project in which teachers could confront and review their own classroom practices was a challenge for the participants. This is particularly the case if the fact that educational research conducted at the schools at that time, adopted a traditional perspective, is taken into consideration. Consequently, as pointed out by some of the teachers, much of the research conducted at the schools did not involve the teachers since it was conducted to serve institutional or private interests. In the researcher's view, this can explain the straightforward acceptance by the teachers of their engagement in the action research. Indeed, taking part in a piece of action research represented for them an opportunity to examine their own teaching. At the beginning of the process, some of the principles of action research, such as self-evaluation and the resolution of teaching problems by the teacher, were very attractive. It meant they could have an opportunity to rethink the practice in a new way and share experiences with the other teachers. The researcher had previously identified these teachers' assumptions during the formal interviews, in ways shown by the following statements:

People speak a lot about environmental issues but teachers don't have the background to deal with it. I think there is a lack of projects which involve all the teachers in the school ... not only I myself with my pupils ... but a project developed in connection with the whole school ... we are short of collective work. (Teacher 8, School A, first interview)

There are people who don't know what environmental education is. I think that a range of new projects about environmental education can emerge from this project of action research ... (Teacher 7, School C, first interview)

During the preliminary steps of planning and undertaking the activities, the researcher observed that the teachers' expectations centred on responding to their everyday pedagogical problems. In addition, the teachers wished to find solutions to the gap between

the real classroom practice experienced by teachers and the discourse of a high-quality educational practice of environmental education recommended by national programmes of education. At the same time, the researcher identified a desire on the part of the teachers to improve knowledge and acquire positive attitudes towards the environment.

The researcher's expectations focused on three main elements concerning environmental education and teaching: an improvement of knowledge on the part of the teachers, a development of their skills and the degree of their willingness to change their practices. With regard to their improvement of knowledge of environmental education, the main strategy of the research aimed at widening the theoretical background of the teachers by embarking on an ongoing process of discussion and study with the participants. A number of abilities were examined such as autonomy, the capacity to make decisions, participation and co-operation with a view of enhancing teaching skills. As well as this, considerable importance was attached to the aim of stimulating teachers' willingness to change their attitudes to their practice of environmental education and become more critical when carrying out emancipatory actions in their professional work. In essence, the main concern was to produce a setting of reflection and action which was based on an improvement of the theoretical background of environmental education required to support teachers' understandings of ways to foster ecological citizenship. The aim of the researcher was to improve some of the teachers' skills and thereby both disclose the ideological nature of their work and, at the same time, enlarge their capacity to analyse pedagogical practice as an emancipatory and democratic enterprise.

The results of the implementation of this phase of action centred on teachers who showed little engagement (eleven teachers), teachers who showed partial engagement (twelve teachers) and teachers who showed major engagement (nine teachers) as illustrates the following table:

## 7.1 The process of raising teachers' knowledge, skills and commitment<sup>6</sup>

Level of engagement	School A	School B	School C	School D	Total
Little	2 teachers	5 teachers	3 teachers	1 teacher	11 teachers
Partial	5 teachers	3 teachers	2 teachers	2 teachers	12 teachers
Major	4 teachers	3 teachers	1 teacher	1 teacher	9 teachers
Total of teachers	11 teachers	11 teachers	6 teachers	4 teachers	32 teachers

- **Teachers who showed little engagement at the beginning**

At the beginning of the action research process, some teachers lacked engagement in situations involving participation in discussions, self-evaluation and reviewing fact-findings. The participation of these teachers at the beginning of the action research can be considered as being weak. This is borne out by the fact that they demonstrated some difficulties in carrying out practical work of a consistent standard in environmental education as part of the action research. Indeed, it was observed that 11 out of the 32 teachers showed difficulties in developing the skills and knowledge needed to plan and implement a consistent environmental education project which conformed to the action research methodology.

A number of factors can explain the limited involvement of these teachers in the project at the beginning. Initially these teachers expressed great willingness to share their own experiences with other teachers. However, the researcher observed that most of them lacked familiarity with a more collaborative practice. That is, although the teachers wished to get involved in the research, in practical terms they lacked some of the skills needed to be engaged in a more participatory practice. For instance, during the planning stage, a central concern of the researcher was the poor level of discussion displayed by most of these teachers when sharing opinions about the examination of their practice. Although it is normal for teachers to engage in discussion at schools to check up on pedagogical issues, and the researcher had the opportunity to take part in many such meetings, the discussions

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<sup>6</sup> The analysis did not take into consideration those four teachers who were retired (one teacher), sick leave (two teachers) and resigned (one teacher) once they left the research at the beginning of the process of action research.

usually centre on the students' problems with individual teachers. That is, the idea of planning and acting together in the course of an investigative study was unusual for them. Discussions about ordinary problems related to pedagogical practice are regularly undertaken at schools during meetings between teachers, deputy heads and parents. However, it was more usual for this action research to be planned and undertaken as an isolated fact than as a collective process of discussion. Indeed, the secluded way that most teachers tended to carry out their pedagogical practice, that is, without any interaction between themselves, was a key element that was identified by the researcher when rethinking the project in terms of a collaborative and participative process, which is what is required from an action research perspective. At the start, these teachers experienced some difficulties in adhering to this new scheme of work. On many occasions, the researcher felt that their expectations laid in the decisions she made about planning and taking action. This feature of this group of teachers will be further commented on in the discussion section of this chapter.

The first step taken by the researcher was to join these teachers in considering what their role would be during the research. This was followed by a discussion with them about the essential skills required for action research such as the ability to exercise autonomy, the capacity to make decisions and the ability to participate. In this way, the researcher was gradually constructing a pedagogical arena with them which was based on the participatory and mutual aspects of an action research project. This strategy was useful in many respects and the researcher observed some positive results. For instance, some teachers began to display ability in planning and acting. In addition, the teachers' discussions led to a bonding between them when they discussed their projects during the meetings. It was evident to the researcher that a new kind of relationship had been established. An example of this is the fact that, despite the difficulties of being more autonomous, those eleven teachers made some progress in terms of personal and group relationships. Moreover, this gave the teachers an opportunity to discuss their own project and contribute to other teachers' projects.

Secondly, most of the eleven teachers encountered difficulties in understanding that the environmental condition of their students was a situation that had been determined by social problems. As a result, they had some problems realising that the difficulties faced by



pupils are structural rather than individual. This led them to regard some of the projects from a simplistic perspective and meant that they tended to reproduce kinds of socio-cultural patterns which were often different from the real conditions facing the students. For instance, some teachers were engaged in planning activities connected with recycling. The idea was to stimulate the practice of recycling and involve students and parents in a campaign to heighten the community's awareness of the importance of dealing with rubbish. Teachers expected that this would encourage pupils and parents to adopt positive attitudes in relation to the importance and necessity of recycling rubbish. The learning outcomes were based on setting up strategies to change the behaviour of students and parents to the question of recycling their waste. They asked their pupils to bring materials such as non-returnable bottles and cans to the classroom. However, the response was disappointing and only a small amount of such materials was in fact collected. At first the recycling idea seemed to be very attractive to the teachers. But on further inspection during the process of evaluation, the teachers realised that most students did not bring such materials to the classroom because they do not use this kind of material in their everyday lives. That is, these children and their families are not in an economic position to buy products such as soft drinks that come in bottles or cans. This situation demonstrated that there was a lack of understanding on the part of the teachers and exposed their inability to relate environmental education practice to the pupils' real social conditions.

Furthermore, most of these teachers showed a lack of updated knowledge of the theoretical background of environmental education. This can be explained by the absence of effective teacher-training in the area of environmental education in many Brazilian primary schools. Most of these teachers were not acquainted with such concepts as modern environmental education as sustainability or social diversity and their relationship with environmental problems although these topics are part of the new curriculum. The solution for improving teachers' theoretical background was to hold meetings to discuss some of the content of the curriculum. This strategy was very helpful even though some teachers did not attend them, the reason given being lack of time.

Likewise, some teachers raised problems about the question of connecting the practice of environmental education with other subjects in the curriculum. For instance, they considered Mathematics and Portuguese as being more important than the others. As a

result, environmental education was relegated to a secondary position during the classes and it was only taught when there was spare time. This point is illustrated by the following statement which was made by a teacher during a meeting held at the school:

We teachers have a lot of issues and subject-matter to teach children in the classroom and I've been giving priority to Portuguese and Maths. (Teacher 4, School C – Meeting at school – from the researcher's field diary on 13.06.2003)

The idea that environmental education must be taught to children as a separate subject caused some problems in planning and implementing the activities during the research. First, some of the teachers failed to understand that environmental education was a broad topic and this made it harder for it to be taught in normal classes. Secondly, the difficulties teachers experienced in carrying out an open environmental education project retarded the children's progress in these activities. Moreover, some traditional practices found in the schools, such as the overvaluation of the corrective process of teaching of environmental education slowed down the process of emancipatory actions rather than nurturing a critical interpretation of environmental phenomena. The following report from the researcher's field diary illustrates the idea that distancing oneself from certain traditional practices at school demands a constant reviewing by teachers of their attitudes.

During the meeting, some teachers reported that carrying out a critical project can be beneficial but that negative factors also arise during the process. Some teachers find it difficult to deal with critical interpretations since this causes them more work. For instance, Teacher 9 from School A reported during the meeting that it is very difficult to encourage pupils to undertake emancipatory actions and critical thinking because it is easier to be a traditional teacher. She maintains that: “... *to be a critical person is very demanding and requires a lot of effort. It is necessary to review and re-plan the classes in a continuous manner and teachers do not always have time to do it.*” Although some teachers agreed to participate in the action research and tried to conduct a form of environmental education which was based on a critical understanding of environmental problems, some pedagogical practices are linked with a restricted understanding by the teachers of nature and society. (Report from meeting with teachers from School A on 06.05.2003, researcher's field diary)

It is worth pointing out that many teachers alleged that there was a lack of time to plan and implement the environmental education project. This claim was considered by the researcher as being rather dubious since the focus of the problem was not scarcity of time so much as the way that teachers planned their activities. In view of this lack of interest

shown by these teachers at the beginning of the research, the researcher decided to re-think some strategies to stimulate teachers to review their values and attitudes. An interesting strategy emerged from two of the four schools. Schools A and B decided to organise an exhibition of the results of the implementation for the benefit of parents and the wider community. This event had some positive effects on the research. The researcher observed that teachers showed more enthusiasm about taking part in the project. Nonetheless, there was one point which caused the researcher some concern: *Were teachers' understandings of environmental education based on pupils' real needs through 'little battles' in everyday practice or 'remarkable actions' to be exposed in the school environment?* The outcomes arising from this question will be discussed in the next chapter during the final evaluation of the research.

- **Teachers who showed partial engagement at the beginning**

The second level of engagement showed by teachers at the beginning of the implementation can be described as an intermediate level, lying between a minor and a major involvement in the research. Twelve out of the 32 teachers demonstrated engagement in the process in such a partial way. This means that, unlike those teachers who had only a limited understanding of how to participate and collaborate in the process of the research, these teachers showed a greater willingness to reflect on and discuss their practice. Moreover, they did not merely raise operational difficulties to planning the environmental education project. Rather, their performance betrayed some limitations concerning the theoretical background of environmental education. However, in the case of these teachers, this lack of knowledge was not an insurmountable obstacle; rather it was a significant opportunity to overcome some pedagogical and operational barriers. In other words, these teachers' willingness to reflect and discuss their experiences in developing environmental education gave rise to a constant process of learning and revision of knowledge.

In addition, some of these teachers' willingness to argue against the viability of a critical intervention in pedagogical practice made them analyse their practice as part of a continuous process. Their ability to use the process of action research to form ideas, which were grounded in their own experiences in everyday practice turned them into people who were more critical of their interpretations. In this way, they were able to identify some essential aspects of the process of carrying out environmental education. In contrast with

teachers who had difficulties in understanding environmental education as a broad issue with a socio-political dimension, these teachers showed a greater willingness to reflect on and discuss the possibility of strengthening the emancipatory attitudes of students through a critical perspective. They became aware of the importance of a critical environmental project. However, their understanding of the process at the beginning of the process of action research was limited to some extent.

Even though these teachers supported a perspective that connected the environmental problems experienced by students in everyday life with structural forces, they failed to understand the bearing problem-solving strategies and emancipatory actions had on students' lives. During the discussions, the researcher observed a fatalistic tendency on the part of most of them when explaining social life. This means that these teachers demonstrated a strong predisposition to accept things as inflexible and unchangeable and manifested a belief that people are not able to change the way events occur in social and political life. It is important to observe that these teachers' assumptions were not confined to the teachers who showed a partial engagement at the beginning of the research but was also diagnosed among some teachers who had little involvement. Indeed, some teachers' statements during the interviews and conversations held at the beginning of the research revealed that it was difficult to change the social conditions of the pupils. This is illustrated by the following statements:

In the school that I used to teach in it was very difficult to develop environmental education. It was a very poor school. I mean that people [pupils, parents and people from community] were poor not only in economic terms but they were poor in their cultural and environmental awareness. On one occasion the principal got some plants to grow at school. Well, these plants were placed in front of the school but people from the community destroyed everything in a few days. They stepped on the plants. So, you teach, teach and to no avail. It's discouraging! (Teacher 4, School B, first interview)

You try to teach some [environmental] values to the pupils but they don't accept them. Often pupils say: "Miss, my mother said to me don't do this or that ..." [in relation to what was taught in the classroom]. (Teacher 9, School A, first interview).

As well as this, during the school meetings, it was not unusual to observe some assumptions made by the teachers such as *Why be a critical person if you can't change things?* Even during the first workshop these teachers outlined some ideas about critical environmental education theory and practice. The following extract from the researcher's field diary reveals the feelings some teachers had about the role of criticism in environmental studies.

Some teachers seemed to be reluctant to adopt the recommendations of an emancipatory environmental education. These teachers endorse the position that it is better positioned in theory than in practice. One of these teachers pointed out that there was a rhetoric-reality gap in the use of a critical perspective to understand and solve environmental problems faced by children and parents in the community. She reported in her school community that wood extraction has continuously been destroying the local environment. The native forest has been supplanted by a pine plantation which is used by the furniture industry. In addition, the natural reserves of talc in the area have been continuously exploited by the ceramics industries. The problem of the devastating impact on the environment has been distorted by those who only concentrate on the idea of progress and economic growth. Many of the pupils' parents have been forced to work for these industries since they have financial difficulties when looking after their own crops. That is, the expansion of these industries creates new ways of regulating the job market and encourages people to engage in this kind of work – there is no alternative for them. As a result of this, this teacher argued the reason “*Why should we teach pupils that they must be more critical if their parents' situation is structural and can't be changed? That is, you put in your pupils' and parents' minds the fact that this situation has to be changed. If you get the pupils and parents to accept these ideas, they can argue against this situation and will probably lose their jobs. Who is responsible for this? It's very dangerous to be critical!*” This teacher's statement appealed to many of the teachers present and provoked a wide discussion among the participants. However, it was opposed by some teachers (some of them from the same school) who rejected the idea that people cannot change their social situation and argued that education has often accepted environmental catastrophes uncritically because of the idea of progress. (Report from the 1<sup>st</sup> workshop on 05.02.2002, researcher's field diary)

The resignation shown by some teachers when facing social and political problems found in everyday life denoted an uncritical acceptance of their social conditions. On many occasions, when teachers were planning their activities, the researcher had the opportunity to observe a lack of understanding among them of how to bring about a more realistic environmental education project that refuses to uphold certain kinds of social order in society. The difficulties these teachers had in becoming engaged in a critical pedagogy centred on their refusal to defy some principles and truths from the social logic of production and consumption. The researcher also observed that teachers were often stunned

when they found out more about their students' social conditions but were frightened to face the consequences of a more proactive education that included actions. An example of this was an activity carried out by Teacher 5 from School A. The teachers' plan was to study the environmental conditions of the school neighbourhood to detect problems from pollution from factories. The teacher and her pupils identified many health problems during the study. As a result of the study, the teacher decided to encourage actions that would alert the population to the effects of pollution from factories. However, she was afraid that this might lead to an institutional reprimand from the school or even from the factories' owners. This example of teachers' feelings about critical environmental education actions became a central point of discussion between the researcher and teachers. The researcher realised that a crucial part of the action research endeavour concerning their practice of a critical environmental education was to attempt to overcome feelings of 'conformism' and 'pessimism' on the part of the teachers.

The strategy used to engage these teachers in a more complex practice was to encourage them to reflect on their attitudes, values and teaching. An important and powerful contribution to help deal with this situation came from the experience of the other teachers who were obtaining positive results from their projects. In other words, sharing opinions, suggestions and practice among the participants enabled those teachers who were facing some difficulties to review their practice. Teachers who had embarked on successful projects produced a set of knowledge that provided a 'counter-discourse' to confront standards of conduct and expectation. For this reason, during the meetings it was possible to discuss some essential approaches to link environmental education which included new forms of understanding social life aimed at breaking away from certain kinds of dominant perceptions and social relations.

- **Teachers who showed major engagement at the beginning**

Unlike those teachers described in the preceding sections who showed a low or intermediate commitment at the beginning of the research, nine out of the 32 participants demonstrated a high level of participation and engagement. These teachers proved to be more engaged in a collaborative process as required by action research. Their dedication to planning the activities and their commitment to preparing the project was very positive. In view of the fact that most of the teachers involved in the research gave a reductionist

interpretation of environmental education, as discussed in Chapter 6, the researcher was surprised at this finding. The fact that these teachers were involved in sharing ideas and thinking about the activities and particularly their willingness to accept the main procedures of the action research methodology was unexpected at the initial stage of the research. Indeed, these teachers showed a considerable capacity to plan and think about the actions in a group process. The ability of the teachers to participate in an interdisciplinary project that takes into consideration the students' real lives, while also being able to solve problems was a significant undertaking. Besides this, these teachers displayed an admirable willingness to emphasise the importance of environmental knowledge and awareness, when thinking about their actions.

In contrast with those teachers who had difficulties in planning their activities, these nine teachers demonstrated a considerable capacity to reconfigure the contents of the environmental education curriculum so as to suit a more autonomous pedagogical practice. The dedication of these teachers and their eagerness to be engaged in the process was clearly apparent to the researcher. For instance, these teachers were usually ready to discuss and reflect on problems arising from their pedagogical practice with the researcher. In addition, most of them showed they were keen to pursue a pedagogical practice that endorsed a decision-making process not only in terms of their involvement with other teachers but particularly with students. Three out of these nine teachers showed an enormous capacity to be creative through their on-going ability to be innovative in their everyday classroom practice. Their concerns about educating for social justice by means of environmental actions and solving students' social problems were linked with an open understanding of social life. The extent of their engagement can be exemplified by the way their teaching classroom practice focused on the real problems faced by children at schools. The following example of planning illustrates one of these teachers' experiences concerning critical environmental education and action research:

#### **Planning environmental actions - Teacher 7, School C**

*Identifying the initial idea:* the teacher was worried about the pupils' lack of knowledge of the ecological impacts, resulting from an uncontrolled urbanisation process, on the local environment and the consequences of this for quality of life.

*Reconnaissance:* the teacher analysed the situation and came to the conclusion that pupils overvalued the idea of progress without considering the ecological problems experienced by them in their local community such as pollution from industries and environmental degradation. Through oral discussion with pupils, she observed that children tended to reproduce their parents' conceptions about the overriding importance of economic progress in the local community.

*Preparing the general plan:* the teacher's intention was to stimulate the pupils' critical thinking with regard to their understanding of the environmental and social circumstances of their neighbourhood. The teaching practice aimed at the following:

- a) raising pupils' perceptions of the consequences of introducing changes in the environment that degrade the quality of human life
- b) stimulating pupils to identify the main environmental problems of the neighbourhood
- c) involving pupils in pointing out the positive and negative aspects of economic progress and the process of urbanization
- d) increasing the pupils' understanding of citizenship through environmental education.

The teacher planned and implemented three key action steps:

*Action step one:* set up a group situation in which pupils are challenged to think about the consequences of environmental degradation in the community.

*Action step two:* arrange a visit to the community for the pupils to observe and identify the main environmental problems and carry out interviews with people of the region to capture the local population's impressions of the problem.

*Action step three:* organise the pupils to prepare a report to be discussed in the classroom.

*Monitoring the implementation and effects:* the teacher monitored the experiment by means of observation. Subsequently, she made use of oral evaluation with pupils to detect the effects (positive and negative) of the implementation.

*Identification and revision of the general idea:* she observed an improvement among the pupils in terms of their ability to discuss and analyse the problem. The next step undertaken by the teacher was to encourage pupils to discuss the problem with their parents. The main aim was to encourage pupils to help their parents to change their conceptions by explaining at home what they learnt in the classes. On the basis of this, she amended her plan when considering its effects, i.e. both the successes and failures, of the implementation.

*Amended plan:* the teacher decided to carry out meetings with parents at school to discuss the environmental problems and find solutions to them. The main plan of action which she drew up consisted of setting up a parents' group at school to discuss and recommend alternatives to environmental problems faced by the community.

(From the field diary of Teacher 7, School C. The description of the planning was based on Elliott's model of action research which was outlined by Naish (1996) and summarised by the researcher.)



The impacts of this teacher's practice and of other teachers' experiences will be more fully discussed in the next chapter which is designed to evaluate the implementation of the research. For the time being, it is important to mention that a significant element that was identified by the researcher during this phase of action research was the nine teachers' willingness to learn and put into practice their apprenticeship. In contrast with those teachers who showed some constraints about being engaged in a more complex process of evaluating, these teachers did not adopt a stance of resistance when facing new forms of teaching. They demonstrated a good capacity to listen to criticisms and evaluate themselves. It is important to note that, self-evaluation and a willingness to listen to criticisms about practice and review actions is not an easy undertaking; rather it is focused on a great intellectual maturity and tied to a process or praxis. This will be analysed at the end of this chapter during the discussion.

However, the level of participative collaboration demonstrated by these teachers at the beginning, did not necessarily mean that the process of raising teachers' knowledge, skills and commitment would be a successful enterprise in the following stages of the research. If, initially these nine teachers positively lent their support to the research, the following months proved that things could change. Indeed, in the subsequent stages, some of these teachers had difficulties in handling the practical aspects of teaching and also in learning a critical environmental education. For instance, some of them showed a great willingness and ability to plan the activities but showed difficulties in implementing them. Some projects proved to be very well planned but when teachers attempted to put them into practice, they observed that their projects raised some problems. This had a negative impact on them and made them feel discouraged by their performance. This situation caused the researcher a good deal of concern. The teachers' disappointment was very frustrating for the researcher since it could affect the development of the following cycles of the research.

The strategy used by the researcher to help the teachers regain their enthusiasm about being engaged in the process, was to discuss with them the failures and negative aspects of their environmental projects and then draw up an amended plan. The researcher's idea was aimed at restoring their skills so they could perform the actions. Three essential points were analysed together with teachers which are as follows:

- the internal contradictions of their goals (the differences between what was being told, being taught, being practised and being learnt)
- the discovery by teachers of what they can do and what choices are available rather than planning what they are unable to do
- the expected immediate impacts on their teaching as opposed to a process of growing knowledge through a perspective of the praxis.

In undertaking this analytical strategy with the teachers, the researcher identified a new element: the conflicts established between the teachers who were successful in carrying out the actions and the teachers who were facing difficulties in undertaking the practice. In other words, the comparison between the teachers with regard to what they described – some referring to “sturdy practice” and others to “fragile practice”, emerged as a significant component in understanding the power relationships between some of the participants. These conflicts were observed in three out of the four schools. If on the one hand, these power relations could be considered a negative aspect insofar as they implied a lack of confidence on the part of the teachers, on the other hand, they were a positive factor since they allowed the teachers to discuss their relationships. As a result of this, it was possible not only to discuss the professional practice adopted by the teachers but also to review some personal features such as friendship, fellowship, engagement, participation and collaboration. In the final cycle of action research, during the last workshop, the teachers mentioned and (re)evaluated this situation pointing out the importance of this moment for their professional development and empowerment. In the next chapter, there will be a discussion and analysis of what changes were undergone by the teachers with regard to attitudes and improvements in their practice.

### **7.3 Discussion**

A number of issues have emerged in this study with regard to the planning and implementation phases of the research. The analysis of the willingness of teachers to acquire knowledge and skills to promote environmental education which is based on social equity and sustainable actions has revealed variations in the degree of the participants' engagement in the practice. Far from being an easy task, analysing teachers' experiences within the pedagogical and social field rests on a complex set of issues involving private and group rationalities, interests and commitments. In fact, it is a mixed up context made up

of contradictory elements which are not easily captured by the researcher's techniques. Hence, an analysis of the results that emerge from the teachers' engagement in the research requires an on-going review of the main occurrences of the process and is aimed at finding contradictions of social and educational context where they are inserted. Constitutionally, teachers are components of social reality which is in a continual process of construction. This implies that there is a need to understand human experience through the perspective of praxis. That is, it is not possible to interpret social reality by means of a causal description and the application of universal laws – at least, not in a critical appreciation of facts. Rather, a coherent analysis in critical theory must rely upon revealing explicit and implicit conflicts and contradictions. In the light of these considerations, this final section discusses the main findings through a perspective of attempting to understand the main contradictions of the teachers' practices which were captured during the preparation and implementation of their actions. The discussion will be divided into four parts comprising the following: a) decision-making processes, b) culture of resignation, c) a sense of making no mistakes and d) ideological dilemmas with regard to the use of critical orientation.

#### **a) Decision-making processes**

The process of decision-making is connected with the criterion of autonomy and rather than being a theoretical activity, is a practical exercise. In other words, the attainment of autonomy as an emancipatory process, which is required in an action research project, implies carrying out one's decisions in concrete situations. The issue that arises from this is that the school environment is a multidimensional field that embraces internal and external power relations which are based on administrative principles and rules. In practical terms, this means that teachers often have little or no control over their practices since they are intrinsically engaged in acting within hierarchical institutions (Carr and Kemmis, 2002). Furthermore, the practice of autonomy and the use of teachers' decision-making are not always given highest priority as important and collective ingredients in school. In general, the school, being an administrative organisation, tends to reproduce a set of rigid values in which everyone's position is very clearly defined. When, through an action research process, the independence and participatory components are extended, this goes against some of the cultural and statutory principles of the institution. Indeed, conflicts of interests emerge during the concrete practice and tend to derail the construction of a more independent way of undertaking teaching.

In rhetorical terms, the introduction of a plan to advance the teachers' decision-making processes was considered by the researcher to be a very prominent aim of the research but in practical terms, this intention was the opposite of some centralised principles which are found in certain schools. The consequence of this was the appearance of some difficulties which the teachers had to face in working out a more independent pedagogical practice. As well as this, it was observed that the teachers' lack of familiarity with the practice of significant decision-making, made the process of their attempts to control the practice rather fragile in some ways. Along with this, undertaking an autonomous practice implies assuming responsibility for the results (positive or negative) and means being ready to accept criticisms. Of course, this is not easy. This may explain why many teachers, particularly those who only showed a minor engagement at the beginning, tried to transfer the task of making decisions about their projects to the other teachers or the researcher.

But if, teachers faced some institutional and individual barriers in their attempt to become more autonomous, at the same time, they had the opportunity to employ a more independent practice, even in some cases in a fragile way. This means that the teachers' efforts to transcend limits were a good preparation for overcoming institutional barriers. In attempting to develop a more autonomous practice of environmental education, which was unlike what they had been used to carry out at that time, the teachers started to put into practice a new way of conducting their classroom teaching. The final results of this undertaking will be discussed in the next chapter. For the time being, it is enough to point out that autonomy viewed as a democratic process is not a concession from what is imposed by others; rather it is an individual or/and collective achievement. Indeed, it is encapsulated in everyday social experience through a process that comprehends on-going revisions through action-reflection-action.

#### **b) The culture of resignation**

The idea of the culture of resignation emerged in this study as a result of the propensity of some teachers to regard it as natural or as difficult to change certain situations which are found in society such as the exploitation and oppression experienced by many of their students in their local communities. A conformist reading of social reality supports a fatalistic attitude that some teachers analyse as being the relationship between humanity

and nature. Thus, what should be interpreted as a discrepancy, is understood as being normal. This is intrinsically related to the alienation process that excludes human thinking from action, as was discussed in Chapter 3 of this research (see Section 3.3). Alienation from nature materialises the tolerance of social injustice, which in Freire's view represents the negation of the Other as Subject, i.e., one who is able to create and recreate everyday life. In such circumstances, alienation reinforces conformism which often prevents the development of emancipatory knowledge, as set forth in Habermas' conception in which a problematic claim has to be appreciated or abandoned through the criterion of truth. Corroboration of this state of affairs is to be found in McLaren (1995) when the author discusses pedagogical processes and the use of a 'predatory culture' in schools. In the words of the author, the educator's task:

...takes the position that in relation to what is happening on the popular front, critical pedagogy must become a strategic and empowering response to those historical conditions which have produced us as subjects, and the ways we are inserted on a daily basis into the frontier of popular culture and existing structures of power.(McLaren, 1995:21)

The 'cultivation of conformity' (employed here in a different context to that in which Carr and Kemmis (2002) use the term to analyse Schwab's (1969) "The practical: the language for the curriculum") emerged as a crucial point in this study. In fact, many teachers, particularly those who showed a partial involvement at the beginning of the research, believed that the idea that students' environmental conditions cannot be changed and the assertion that *it is dangerous to be critical* represented the cultural reproduction of particular values. The teachers' expressed tendency to accept social reality as an irreversible condition relegates education to a subservient role in society.

However, the goal of action research is to promote changes in peoples' attitudes and conceptions by improving human conditions through the "knowledge generation process" (Hillcoat, 1996:150). When account is taken of this criterion, the process undertaken by teachers in the following phases of the research created opportunities for teachers to revise their basic assumptions concerning critical environmental education and emancipatory actions. Through an on-going process of self-reflection and establishing contacts with

students' real lives, some of these teachers were able to experience different ways of analysing the pedagogical and social context. In other words, by the end of the research, it was clear that they had altered their outcomes of their preliminary conceptions.

### **c) Sense of making no mistakes**

A fundamental premise of critical environmental education is the evaluation process. The practice of continuous evaluation is a sine qua non for thinking and re-thinking the situation and obtaining a satisfactory change. Individual and collective judgments about the course of action represent a vital basis for the future of the enquiry. In a critical pedagogy project, teachers are constantly being invited to challenge and criticise the formal classroom structures they experience. Essentially, teachers' attitudes should encapsulate the recognition of some 'success' or 'failure' arising from the implementation of the practice. In other words, a central requirement in a project like this study is the possibility to revise and make improvements. In such circumstances, 'failure' is not a cause for punishment; rather it is an essential issue to be taken into consideration by the subjects.

However, dealing with failure requires an individual to recognise that they have limitations and also to be willing to improve their abilities. This requirement is connected with intellectual maturity and the capacity to extend knowledge in the interests of a more complex rationality, namely to overcome the positivist rationality of a perfect symmetry between thinking and action through a creative and dialectical process of knowledge production. No doubt, this is not a simple task. Indeed, many teachers in this study ignored the fact that the production of knowledge could be viewed as a process constructed by human outcomes from everyday practice, whether successful or not. As a result, the teachers' sense of making no mistakes emerged as a crucial issue during this phase of the action research. This meant that the distorted perception in which people, in this case teachers, feel they cannot make mistakes inhibited to some extent, the teachers' willingness to expose and face their problems, failures and difficulties. Some teachers experienced difficulties in grasping the implications of research results and transforming findings into a means of illuminating teaching practice. This implied that there were certain limitations to the effectiveness of the implementation of their actions. The consequences for professional development were that some teachers' actions were fragmented and suffered from a low

level of commitment in terms of improving knowledge in research. This point will be further explored in subsequent chapters.

#### **d) Ideological and professional dilemmas with regard to the use of critical orientation**

An important finding obtained from the research was that there is a gap between what is planned and what the teachers effectively concretise. Whereas some teachers demonstrated a major engagement in the process through an ability to plan with accuracy, others underwent serious difficulties in undertaking the planned action. Perhaps a more sophisticated analysis which is based on epistemological concerns regarding the dichotomy between theory and practice, can explain this pedagogical vacuum. With regard to this, an interesting analysis can be found in Carr and Kemmis (2002) where the authors discuss the problem of relating theory and practice in education in the light of different scientific approaches. They state that educational problems concerning the fissure between theory and practice represents a “challenge to the paradigm’ adequacy” (2002:111). The authors insist that often teachers’ expectations, when involved in their practice, are not compatible with the “practical reality itself” (2002:112). Furthermore, the relationship between theory and practice is intrinsically linked to the way that practitioners interpret their actions. To this extent, the interpretation of the practice is not isolated from the “practitioners’ beliefs and preconceptions”(2002:111). For the purposes of this study, the segmentation between planning and the implementation of knowledge can be explained through an ideological and professional dilemma experienced by these teachers during the period of implementation. In fact, the predominance amongst the teachers of mechanistic and reductionist understandings and practices has had a considerable influence on their professional development. In other words, to a great extent, teachers’ experiences and attitudes concerning environmental education practice corresponded to their interpretation of nature and society. In such circumstances, the ways that primary schoolteachers understood environmental education, (as discussed in the preceding chapter), was an essential step for the researcher in understanding the processes experienced by the teachers during the planning and implementation cycles of the research. The intellectual dilemma which materialised as a result of the teachers’ ideological positions and professional claims for more politicised actions, led to a situation of conflict. However, in the context of this study, there was a positive aspect to this insofar as it enabled teachers to review the contradictions

of this process. For instance, the research allowed an important link to be forged between teachers' teaching and students' real lives with regard to environmental and social problems. This enabled teachers to review their practice since the teachers were actively involved in working out strategies to solve students' environmental problems. Indeed, teachers became more sensitive to the problems found in their pupils' communities which at that time had been neglected by most of them to avoid embarrassing the children (see for example Section 6.4, page 139, Teacher 7, School A, interview statement). The clash between different ideological orientations from different world viewpoints gave the teachers the chance to create a counter-discourse. This counter-discourse entailed the cultivation of some 'seeds' of change in relation to teachers' practices.

Hence, the variations encountered when raising the level of teachers' knowledge, skills and commitment, observed during the planning and implementation phases of the research can be explained by their vision of the world and the ways in which they interpret and conduct their pedagogical practice. Understanding these teachers' interpretations allowed the researcher to apply some strategies and adopt a different approach to the process of teaching and learning, as required by action research. Improving the teachers' practice was connected with many factors such as the use of educative and empowering forms of action (Fien, 1992) and the construction of a relevant theoretical background. This meant that the practice of raising the level of teachers' knowledge, skills and commitment so that they could conduct environmental education teaching was based on a complex process of reconstruction of their everyday pedagogical practice. The on-going process of reconstructing practice allowed the participants to review their initial assumptions regarding environmental education curriculum and practice.

#### **7.4 Conclusion**

This chapter has outlined the ways that teachers constructed and interpreted knowledge, developed their skills and showed a willingness to encourage critical environmental education. The outcomes from the implementation with regard to the cycles of action research have been discussed by investigating the different teachers' levels of engagement in the process. As well as this, the chapter provided an analysis of some important aspects of the process of action research, such as self-evaluation, autonomy and co-operation. Together with this, attention was focused on the main internal and external contradictions



experienced by participants during the process of promoting environmental education for ecological citizenship.

The next chapter will describe and analyse the process of evaluating changes occurring during the last cycle of the action research. The main goal of the chapter will be to discuss the possibilities and limitations of critical environmental education.

## Chapter 8

### Emancipatory environmental education: an evaluation of its effects on ecological citizenship and the principles of social justice

#### 8.1 Introduction

The main goal of Chapter 8 is to respond to the enquiries raised by the third and fourth research questions set out in this study. It focuses on the third cycle of the action research process – the evaluation phase. Essentially, the research questions aim at reviewing the results of the action research. The questions are as follows:

- *Did the teachers promote the growth of values of emancipatory action through environmental education?*
- *Did the teachers recognise that emancipatory environmental education provides a way of bringing about a kind of critical thinking on the part of the students which is based upon the principles of social justice and citizenship?*

The central aim of this chapter is to examine any changes in the teachers' thinking and pedagogical practice brought about by the introduction of environmental education in this project. It is underpinned by two guidelines. The first is related to an analysis of the teachers' reactions related to the results of implementing environmental actions. The second refers to an examination of the understandings teachers have of the outcomes arising from the critical thinking of the students when engaged in promoting the growth of ecological citizenship and social justice. The chapter is divided into three parts. The first seeks to evaluate and describe the process which is followed by the teachers when they with the researcher analysed the results of the implementation. The second attempts to analyse the findings of the research with a view to distinguishing between *different* levels of engagement on the part of the teachers in their different understandings of emancipatory environmental education. The third part discusses the effects of the actions carried out with regard to the successes and failures observed by the participants during the experiment.

The analysis centres on the views of the teachers about the extent to which their practice improved during the implementation of the action research methodology. With this purpose in mind, data were gathered by means of three procedures: participant observation carried out by the teachers and researcher, semi-structured interviews carried out with teachers at the end of the process and records of the accounts of the second workshop supplied by the

teachers. As described in Chapters 4 and 5, these methodological instruments allowed a considerable amount of data on the results of the implementation to be obtained. These diverse sources of data gathering provided an appropriate basis for interpreting the outcomes accurately. As well as this, the combination of different methodological instruments tended to reduce the amount of biased information from the participants involved in the research getting different people's perspectives. The strategic purpose of using various methods of data collection in this study was designed to enhance the quality of the research. In addition, the data were subjected to a process of catalytic validity (see Section 5.8) in which the participants' reflections were seen as registering changes in behaviour when they became involved in emancipatory environmental education.

The choice between these three different methods of conducting research was based on the degree of their usefulness and effectiveness in revealing and helping to analyse the main findings during the evaluation process. Participant observation was understood in this study to have an ethical dimension insofar as it provided a good opportunity for one to be within the real life setting of the phenomena, rather than "standing outside" (Robson, 2002:1890). Indeed, this research made use of participant observation when reviewing the social interactions constructed by participants in a real educational scenario. Participant observation data provided the researcher and teachers with the main impressions they had of the actions undertaken by practitioners and a means of interpreting the significance of their practice. At the same time, through interviews it was possible to evaluate the process of taking-action on the part of the participants. The interviews carried out after the experiment provided further evidence about the validity of the findings. In addition, the accounts of the setting up of the second workshop yielded a rich supply of information on the views of the key participants, when assessing the process of environmental education carried out by the teachers.

The evaluation was based on an appraisal of the teachers' experience during the course of the research, as required in an action research process. Improving the teachers' practice regarding their involvement in the enterprise was considered an essential requirement of the research. Thus the evaluation entailed a set of objectives aimed at bringing about reflections by the teachers on their own pedagogical practice. These objectives were based on a set of criteria which were drawn up to help the teachers conduct self and group evaluation. The

criteria were gradually formulated in accordance with the way teachers carried out their planning, decision-making, observing and evaluating. As a result of this, the participants were able to establish a number of conditions to help them evaluate actions during the implementation. These conditions were as follows: a degree of quality in their projects, enthusiasm on the part of the teachers and pupils to put them into practice, a level of reflection and a willingness on the part of the teachers to carry out a kind of classroom practice which was linked to the students' real lives. These were all considered important elements to bring about a good practice. Moreover, they were based on the willingness of the teachers to acquire the necessary knowledge and skills to undertake an active participation in improving the environment through a critical interpretation of environmental education.

## **8.2 Evaluation of the practice**

When analysing the results of this research, it was assumed that an essential prerequisite was to reflect on the effects of the practice undertaken by teachers during their professional development. Although the participants carried out a continuous process of evaluation over each phase of the implementation, as required by an action research enterprise, the concluding evaluation represented a key piece of this study. The evaluation prioritised the main ideas held by the teachers about environmental education practice undertaken during the whole research. Indeed, the main purpose was to understand the effects of the intervention by registering any changes which occurred during the process.

The focus of action research lies in a collaborative and collective involvement on the part of practitioners. For this reason, this study has given prominence to the evaluation phase that can be viewed as a participatory experience or collective event which is carried out by all the teachers engaged in the process. In doing so, one workshop was designed to bring together the main approaches adopted by the teachers and examine the results of the implementation. Moreover, the final evaluation of the research was guided by some important questions (see Section 5.7.5) which were discussed by the participants in the course of the second workshop. These questions stimulated the teachers to reflect on their practice and their understanding of environmental education and its goals. In addition, the teachers sought to understand the evaluation process on the basis of their ideas about the use of critical discussion with students to bring about ecological citizenship and social

justice. As the teachers pointed out, the results of the research were both positive and negative. Along with this, a number of difficulties were faced by the participants which led to reflection and analysis during the evaluation process. At the same time, an individual feedback system was set up to give teachers the opportunity to reflect on their own practice and enable them to bring together the results of the implementation. This individual evaluation was obtained through interviews and conversations which took place in the final phase of the research.

While taking into account the engagement of the teachers in the process (discussed in the previous chapter which analysed the participants' knowledge, skills and willingness to promote the growth of emancipatory environmental education), the evaluation centred on discussing the main fact-findings of the implementation. The complexity of the practice, which was carried out by the teachers through a participatory process, showed a diversity of implications arising from the research. For example, the idea that emancipatory environmental education implies recognising teachers as social agents in understanding the environment through a critical interpretation of environmental problems was highlighted as a crucial element in the process. Indeed, when considered in the light of the main argument of this study, emancipatory environmental education has an essential role to play in helping to empower teachers and students towards an ecologically sustainable society. An analysis was carried out into the way in which teachers were encouraged to think critically about their environmental actions and of how they performed emancipatory actions through environmental education with a view to furthering ecological citizenship and social justice.

One of the crucial aims of environmental education was to replace pedagogical practices which were focused on an 'answering culture' by the perspective of a 'culture of argument'. To achieve this, an evaluation of teachers' practice took into consideration four guiding principles when considering their educational and practical significance, as well as the critical interpretation of environmental issues:

- ability to deal with political struggles to overcome social injustice;
- ability to transpose the mere reproduction of knowledge;
- sustainable actions and ecological citizenship;
- participatory and collaborative values.

In general, the results showed that the teachers' experience of environmental education practice through an 'action research' perspective led to different understandings of the pedagogical process. Some wide-ranging points emerged from the teachers' evaluations during the second workshop. These can be outlined as follows:

During the evaluation process of the environmental actions, the teachers stated that the research represented for them a genuine opportunity to think and rethink their pedagogical practice. In a broad spectrum, teachers stressed the following important aspects of the course of actions they undertook:

- the innovative (and complex) practice brought about by the action research process;
- the opportunity to improve environmental education pedagogical practice at schools;
- the chance they had to build and re-build their practice;
- the opportunity to develop collaborative approaches at school as opposed to isolated practices within a classroom;
- the social and pedagogical barriers found in everyday practice which can obstruct qualitative changes in critical environmental education.

(Report from the researcher's field diary at the second workshop on 29<sup>th</sup> October 2003)

The 32 teachers engaged in the research thought that the enquiry represented an original way of extending their knowledge of environmental education. In connection with this, during the second interview most teachers expressed the view that for the first time environmental education had managed to break free from the confined limits of the classroom and become a broad subject which could be thought of as an open process. In fact, as was observed by the researcher and teachers, discussions concerning environmental issues often gained a wide perspective through the involvement of teachers, students, parents and people from the community. This can be illustrated through the following teacher's appraisal of the research:

The research mobilised the whole school. The project got the people from the community involved. If it hadn't been for this research, I 'd still be confined to my classroom. I'd still be limited to dishing out content ... (Teacher 1, School D, second interview)

Moreover, the idea of being involved in an action-oriented research was a challenging enterprise for these teachers as they had never before had the opportunity to negotiate the main processes of an enquiry by themselves. Most of the teachers underlined the importance of having the chance to construct teaching and learning processes which

embraced a perspective of freedom and were far removed from the inconvenience of 'the impositions of external researchers'. Although some teachers encountered difficulties in endeavouring to establish an autonomous practice, the majority of them valued the opportunity to work by themselves during the implementation of the research. The following statements illustrate their opinions regarding environmental education practice:

... it's the teacher who undertakes the practice in accordance with the students' real conditions. It's the teacher who conducts the teaching process. This was a thing that I've learnt during the action research. (Teacher 9, School A, second interview)

We carried out the project in a state of freedom – there wasn't any imposition of ideas from the school, from you [the researcher] ... (Teacher 8, School A, second interview)

Everything that is new is difficult! I faced many difficulties until I found out the right way to carry out the practice by myself. (Teacher 10, School B, second interview)

I feel that before the research I used to avoid discussing environmental education. When, at the beginning, you [the researcher] said we teachers "are free" to decide if we want to participate in the research or not, I thought I would say no ... but afterwards I decided to say yes because it could be challenging! (Teacher 5, School D, second interview)

Generally speaking, most teachers considered environmental activities to be a beneficial experience when it focused on the methodology of action research and, in pedagogical terms, achieved the goals set out during the planning and decision-making phase. However, some teachers found difficulties in achieving good results when their participation required them to use an empowering course of action. They complained that a number of restrictions impeded their research and threatened the viability of attaining a satisfactory practice in environmental education. These restrictions which the practitioners noted will be discussed in detail in the following paragraphs. Before doing so, it is necessary to outline some aspects of the evaluation process that should be taken into consideration so that one can reach an understanding of the teachers' approaches regarding the results of the implementation.

If one bears in mind the schoolteachers' initial conceptions of environmental education curriculum and practice (which were discussed in Chapter 6), it is clear that the majority of the participants showed a limited understanding of environmental issues at that time. The orientations of the participants which were used to conceptualise environmental education

betrayed a lack of understanding of the social and political dimensions of pedagogical practice. In addition, the cycles of the action research that followed proved that the teachers' knowledge, skills and commitment to bring about emancipatory environmental education were somewhat heterogeneous. Furthermore, the process that the participants undertook during the planning and decision-making stages showed that the teachers embarked on their research from different levels of engagement. The recognition of different stages of commitment at the beginning of the research was manifested in three distinct levels of engagement in the growth of emancipatory environmental education. Chapter 7 discussed and categorised these different levels i.e. into teachers who showed little, partial or major engagement. It is important to note that by the end of process the commitment of the teachers to the research process had acquired a new dimension in its relation to the practice of environmental education. The results of the teachers' performance are analysed in this study at different levels of engagement. This is to ensure that a clear understanding of the emancipatory actions required for ecological citizenship and social justice, which are based on critical thinking on the part of the students, can be arrived at.

However, the intention to implement changes is not a linear process; rather it is embodied in a complex set of phenomena which are mediated by various aspects of human experience. Indeed, changes entail an amalgam of ongoing situations that consist of a constant review of human actions. As it is not a static process, the implementation of changes is not dissociated from connections between action and thinking which are obtained through outcomes from everyday activities in social life. In practical terms, this means that the distinct levels of understandings of the results of the research which are endorsed by the teachers are not unalterable or completed. Rather, the results emerge from a process of the research that is established in a particular, temporal setting and the products occur in a specific social and educational context. Moreover, 'measuring' human actions is not an easy task. Indeed, it is not the intention of this study to 'calculate' human actions. As outlined in Chapter 6 (when this study discussed the different conceptions that allowed teachers to support environmental education), people cannot be listed and indexed in ontological boxes as if they were 'concluded beings'. In an alternative way, this thesis contemplates human beings as subjects who are able to re-construct themselves dialectically through social experiences. The main goal of this thesis is to form a particular



arena of professional development where teachers can implement and evaluate their actions through a perspective of reflexivity. Distinctions which are made in terms of the understanding teachers have of emancipatory environmental education representing the attainment or otherwise of what has been achieved by the subjects during the research rather than a limited 'boxing in' of the teachers' opinions.

### **8.3 Moving from different levels of engagement to distinct understandings of emancipatory environmental education**

A number of differences in the ways teachers interpreted the results of the implementation of the research were observed during the evaluation process. On the basis of distinct levels of engagement obtained at the beginning of the action research, the evaluation process was designed to explain and analyse the different teachers' understanding of emancipatory environmental education. The analysis of improvements in the teachers' practice was based on a tripartite understanding of the connections between environmental education and ecological citizenship. Three different approaches were apparent when the extent of the teachers' willingness to bring about an emancipatory practice through educational actions was investigated. The first level refers to teachers who arrived at the end of the process with a weak sense of emancipatory environmental education. The second level refers to teachers who have demonstrated a stronger understanding of emancipatory environmental education. Finally, the third level consists of efforts made by teachers who displayed a more complex comprehension of emancipatory environmental education. The distinctions can be explained as follows:

#### **8.1 The process of raising teachers' knowledge, skills and commitment at the end of the action research**

<b>Level of engagement</b>	<b>School A</b>	<b>School B</b>	<b>School C</b>	<b>School D</b>	<b>Total</b>
Weak	4 teachers	5 teachers	3 teachers	0 teacher	12 teachers
Strengthened	2 teachers	2 teachers	1 teacher	1 teacher	6 teachers
Fuller	5 teachers	4 teachers	2 teachers	3 teacher	14 teachers
Total of teachers	11 teachers	11 teachers	6 teachers	4 teachers	32 teachers

- **Weak understanding of emancipatory environmental education**

Out of 32 teachers involved in the research process, 12 proved to have a limited realisation of the value of emancipatory environmental education. With regard to their participation in the process of fostering values of critical thinking and citizenship, they showed a weak understanding of the process. It is worth pointing out that these teachers came from different levels of engagement at the beginning of the research: six from little engagement, two from partial engagement and four from major engagement. In practical terms, this means that these teachers, even those who started the process with a major engagement, encountered some difficulties in assimilating a more autonomous practice which linked educational and political struggles to an environmental ethic that catered for the students' real needs.

Several factors explain the low level of awareness of the best way to bring about emancipatory environmental education. The way these teachers conducted the process of environmental actions during the development of the research to some extent restricted the effectiveness of their teaching practice. Indeed, these teachers showed an inadequate interest and confidence in the need to adopt critical attitudes to further environmental actions. The difficulties of bringing about an emancipatory practice through environmental education were explicitly explained by these teachers during the evaluation of the research. Most teachers justified their difficulties on the grounds that they experienced operational problems when attempting to put the aims of the research into effect. For instance, the main problems which the teachers stated that they faced in heightening critical environmental consciousness and improving students' critical skills were a lack of time, personal motivation or support from the schools.

Moreover, many of these teachers stressed that their teaching style was not compatible with the notion of a critical pedagogy. Their wish to maintain traditional practices in the classroom led them to preserve certain values which had a bearing on their interpretation of the educational context. For this reason, they considered the research inappropriate in bringing about some satisfactory results. The researcher had the opportunity to observe that these teachers encountered difficulties in working out a more significant practice for helping students find strategies to think about and improve their environmental conditions. As discussed in Chapter 7, these teachers' allegations reflected 'fatalistic' perceptions

concerning the chances of changing the environmental conditions of the children. On many occasions during visits to schools the researcher was able to observe that they had difficulties in realising that critical teaching can have positive effects on the students' future lives. For example, the imposition of rules (e.g. notions of hygiene) rather than to promote sustainable actions to improve students' social conditions seemed to them a more appropriate way of conveying knowledge to children about how to develop their social and environmental conditions.

The lack of interest in encouraging an environmental education which is combined with ecological citizenship was directly influenced by the teachers' personal identity and the values that reflect the structure of the social order and educational systems in society. They usually tended to reproduce 'functional' statements that ensure a pedagogical intervention which is based on a formal classroom engagement. This supports a particular way of conveying standardized knowledge rather than creating an understanding of social facts from the perspective of the students' realities. Difficulties encountered in overcoming 'centralised' teaching made these teachers fail to appreciate the importance of their students' social and environmental context. As well as this, the teachers tended to explain the difficulties of introducing more complex practices by pointing to deficiencies in the students' learning abilities. They believed that the children experience many difficulties in learning (and according to them this is not restricted only to environmental education) because of the social conditions of their families. Some teachers pointed to psychological problems to explain why their pupils were reluctant to engage in a process of emancipatory action. On many occasions, the researcher observed that the unsatisfactory effects of the teachers' practice had an influence on their students. Indeed, the teachers had difficulties in understanding that the students' lack of engagement in the classrooms could, to some extent, be explained as resulting from a pedagogical practice which was detached from their social context. On account of this, the social and cultural (even psychological) conditions of the children became an obstacle to critical practice in the classroom instead of being a starting-point for teaching values of ecological citizenship. This is illustrated by the following teachers' conclusions regarding the results of the research:

It wasn't possible to develop students' critical thinking in all of my pupils. Some of them are apathetic. They don't participate [during the classrooms]. Their families do

not value some of them in many respects. They are often afraid of saying something wrong ... they don't participate because of their low social standing. (Teacher 8, School A, second interview)

I experienced a lot of difficulties [in implementing the 'proposal'] because the pupils have many social and psychological difficulties ... they have been finding it hard to get engaged in the classrooms ... the social level of the children has been affecting their learning process. Maybe, [the process] failed because I hadn't enough time to plan activities that could stimulate the children's interest... (Teacher 5, School B, second interview)

The student who has a cultural background gets to process the information better ... he/she can allow the construction of knowledge to occur. In contrast, the student who come from a poor background has to be taught some ethical questions initially [in terms of children behaviour]. We know there are children who have more social opportunities, while there are others who come from a poor cultural environment. It's quite difficult to teach these kinds of children and to develop a culture of debate. (Teacher 4, School C, second interview)

Moreover, although the research allowed them to obtain a different understanding of environmental education, they retained a position in which the teaching process designed to bring about changes in students' behaviour was still conceived in terms of notions about the preservation of nature and hygiene. For instance, much of their practice was aimed at evaluating the positive ways in which students should assimilate the correct rules and procedures needed to maintain a healthy environment. These teachers believed that environmental problems are rooted in individual problems and these can be modified if the students can assimilate norms of conduct regarding environmental issues. They supported the position that emancipatory environmental education is an utopian concept. In addition, they asserted that values such as ecological citizenship, social justice and critical thinking are idealised concepts that do not work when they are put into practice. As a result, the teachers regard the unhappy social realities experienced by pupils' families as causing some problems in awakening environmental consciousness. They think that the real lives of the students cannot be changed just by them becoming critical people. When they analysed their practice they found that only little changes were apparent during the course of the research with regard to the promotion of ecological citizenship and social justice through the development of critical thinking. On many occasions, teachers pointed out that the low level of culture of their pupils' families was a great obstacle to achieving an environmental

education which was more consistent with citizenship and social justice. The following instance demonstrates this:

There are people [pupils] who have more chances [material, economic, social], who have wider vision. They are critical perhaps because of the influence of their family. We know there are children who have more opportunities and there are others who come from a poor cultural environment. So it's more difficult to deal with them ... the pupil from cultural background processes information. He is able to construct knowledge. In contrast, the pupil who comes from a poor background even has to be taught ethical values ... after that you can develop a sense of criticism in him. (Teacher 4, School C, second interview).

Most of these teachers encountered some difficulty in acquiring a more autonomous pedagogical practice. The lack of experience with action research and difficulties in undertaking a more complex practice through a process of decision-making was a limitation and prevented them from bringing about qualitative changes in their everyday classrooms. Moreover, some teachers considered that a more open approach to educational practice that entails teachers sharing their experiences was a negative factor of the research. The researcher heard remarks of this kind during the second workshop. The teachers cited problems of adapting to circumstances when they attempted to evaluate the difficulties they had in participating in the project of developing emancipatory environmental education. That is, they argued that action research methodology and the ideological objectives of the research were not well suited to the normal ways that they had of carrying out their practices. In their view, the lack of adjustment between teachers and this particular kind of research formed a powerful barrier against carrying out a good practice. In contrast with those teachers who showed a stronger or more complex sense of understanding of environmental education in transforming the limits of centralised practices, the teachers with a weak sense showed a greater inclination to sustain traditional pedagogical practices. This is borne out by the following statement:

I don't know how to teach in this way, that is, I couldn't to do what was necessary to carry out the research ... I couldn't adapt to it. I felt lost in the process of the research. (Teacher 5, School C, second interview)

In fact, during the second workshop some teachers pointed out that there was a lack of expertise in carrying out an action research project and that this was an important obstacle

to achieving a successful practice. The difficulties the teachers had in enlarging an independent and collaborative project were explained by them as resulting from the conflicts that emerged during the development of the research. There were disagreements between some teachers which arose from their reluctance to face criticisms and these caused considerable difficulty for them to get engaged in an action research process. In contrast to those teachers who achieved a more complex understanding by the end of the process, some teachers evaluated the divergences as being a negative factor. These teachers had difficulties in realising that conflicts occurring in the process of the practice should be regarded as natural and important to the development of a participatory process. In other words, the process of reflecting on the practice and pointing out the effects of the actions which could be considered as 'failures' was understood as a negative point rather than a mean of enabling them to reconstruct their practice in a new way. The researcher's realisation of these opinions expressed by the teachers during the second workshop was summarised as follows in her field-diary:

... some teachers stressed that professional and personal conflicts emerged during the research, for instance, disagreement about the best way to carry out a good practice. These teachers regarded conflicts as having a negative influence on those participating in the research. In contrast, other teachers pointed out that conflicts and disagreements should be expected in any venture where people are attempting to work together. In addition, these teachers related that when the criticism is responded to and other people's opinions and feelings respected, it is possible to achieve "*professional improvement among the teachers*" (Teacher 4, School D). (Report from the 2<sup>nd</sup> workshop on 29<sup>th</sup> October 2003, researcher's field diary)

- **Strengthening understanding of emancipatory environmental education**

Six out of the 32 teachers proved to have a strong sense of the need to improve an emancipatory environmental education. These six teachers also displayed different levels of engagement at the beginning of the experiment: three out of them showed little engagement, two partial engagement and one a more complex engagement.

Consideration of these distinctions regarding their engagement at the beginning of the process shows that the understanding of three out of the six teachers became more effective as the research progressed. Through their participation in the process of action research, the practice of the teachers acquired a new significance by building up an awareness of the need for emancipatory environmental actions. In other words, the process of sharing

experiences and constantly reviewing their practice enabled them to think and rethink their attitudes towards their professional practice. In the case of the two teachers who belong to the partial engagement category, the development of the research allowed them to go on and strengthen their efforts to improve their actions. In contrast, the difficulties encountered by the teacher in the major engagement category during the implementation phase meant that she reached the end of the process with a stronger, if still limited, understanding of the process. It is perfectly natural that some changes, and even a number of setbacks, can occur even in an action research enterprise, given the fact that the research does not seek to follow a single path. When regarded from a perspective of praxis, this situation does not mean reversion; rather, it means a revision of the practice concerning three key ingredients of action research methodology: reconnaissance, reviewing and amending experiences. When this teacher analysed her practice, she stressed that:

During the action research what I realised had changed my mind was the fact that before I used to think that it was necessary to plan mega events to teach environmental education. Nowadays, I realise that environmental education goals should come from the everyday lives of the students... that is, a single and simple situation from everyday existence can bring about very sophisticated processes of teaching and learning. (Teacher 7, School A, second interview)

In fact, positive evaluations which are supported by the teachers should refer to the idea that environmental education can be brought about in everyday practice through what are called 'little battles' rather than to the organisation of 'remarkable actions'. In other words, before the implementation of the research, most of these teachers used to deal with environmental problems through specific events such as an 'Environment day' or 'The day of the Three'. These events were often organised as an end in themselves and characterised by celebrations held on specific dates rather than being based on concrete actions which served the pupils' real needs. During the research, environmental actions took on a more sophisticated character. These teachers made some improvements in their teaching once they successfully linked the content of environmental education curriculum to the students' real lives. In attempting to regard environmental education as a way of fostering sustainable attitudes which focused on the social reality of the pupils, these teachers adopted a perspective which enabled them to make some progress in emancipatory actions.

An important point which was raised by the teachers was the sense they had that environmental education is not an isolated fact, but rather has an interdisciplinary character. In the opinion of these teachers, an important change was when they acquired a vision that environmental education is a real subject and its content is not superficial. They noted that environmental education classrooms were in fact planned and taken seriously during the research which had not often occurred before. This suggests that if emancipatory environmental education is still a difficult undertaking to achieve, environmental issues have been assuming more privileged position in the school curriculum.

In addition, the teachers mentioned that the research helped them to understand environmental issues as a specific subject. Before the research, environmental education practice was often carried out by means of generic explanations of environmental problems rather than attempts to focus on problems experienced in real life. In fact, teachers used to explain environmental issues through scientific concepts without relating the contents to the social conditions of the school communities. This is illustrated by the following teacher's comment:

I was giving a lesson on the characteristic of the water – that it has no colour, no odour, no taste, etc – when suddenly one of my pupils asked permission to speak and said: “Miss, our water is not always like what you are telling us”. “Why? It should be like this!” – I replied. He said: “It should be but it isn’t. When the stream fills up because of flooding, the water becomes dirty and smelly! The water has a muddy taste. There are many people who live on the banks of the stream and they use that water.” So, the child told me this problem. Well, we know that there are people drinking polluted water but I couldn’t imagine that one of our pupils was facing this situation. This child’s account woke me up! This child’s account which I listened to during the lesson gave me some new insights ... (Teacher 1, School C, second interview)

Another example related to the connection between environmental practice and the lives of the students emerged from Teacher 5 in School D who was cited in Chapter 6 (see page 127). At the beginning of the research, this teacher discussed the topic ‘Water’ with the pupils. The teacher’s main goal was to increase the students’ consciousness of the importance of water. During the lessons, she recommended some strategies for avoiding unnecessary waste of water. She raised some practical points for the to pupils to consider, such as the importance of saving electricity and water. However, most of her pupils do not



have showers or taps at home. During the research she managed to review and re-plan the activities from a different perspective. She decided to include activities which considered the use of water in relation to the students' real needs. For instance, the planning was focused on children's health and strategies aimed at helping pupils to avoid diseases caused by an inadequate water supply. The following statement stresses how this teacher evaluated this situation at the end of the research process:

At the beginning when I discussed the topic water with them, emphasis was laid on the need to avoid waste while taking showers ... well, there were things which I taught that were not a part of their lives. So, when I carried out a survey to know how many students had showers at home, I realised that the majority of them did not have one. . When I started to rethink the project I realised that it had to focus on the students' lives ... relate to their everyday problems ... (Teacher 5, School D, second interview)

Despite progress made in overcoming restricted view of the value of environmental education, some of these teachers maintained a limited idea of environmental education as a means of bringing about social changes. Some of them retained vestiges of a more traditional understanding of social life. For instance, although Teacher 5 made remarkable improvement in her practice, and demonstrated a wider understanding of environmental education, she still maintains some personal and professional positions and believes that environmental problems can be solved through individual commitment rather than by understanding problems as social and structural issues. During the evaluation this teacher stated that:

The pupils continue drinking the polluted water. I think they are resigned to this. (Teacher 5, School D, second interview)

Moreover, it was still a challenge for many of these teachers to focus on attempting to solve problems through environmental practices connected with political struggles to overcome social injustices. That is, many of these teachers' practices remained fixed on conservationist measures such as notions of nature and hygiene as a form of environmental protection. For instance, the practice of recycling in itself, although better organised than before, is strongly inculcated in some of these teachers' minds as being an intrinsic part of environmental education. The question that arises here does not centre on recycling as an activity in itself; rather it centres on what kinds of student outcomes can be expected from

these types of activities. In fact, they usually expected the pupils to assimilate the practice of recycling to preserve natural resources through conditioned responses. Of course, recycling is admirable and absolutely necessary. However, this kind of practice should be treated in a social and political way and as a means of addressing the question of awareness or it may be unsuccessful. Thus, despite making some progress, these teachers still need to improve their capacity to act and reflect so that they can adopt a new mode of understanding environmental education as a complex process.

In fact, most of these teachers are still a long way from understanding environmental education as a subject which aims at widening critical thinking through a culture of argument. They regarded the setting up of a new culture of argument to replace traditional practices at school as being a demanding educational project. The following statements exemplify some of the teachers' feelings regarding progress and the difficulties encountered in linking environmental education with critical thinking:

There is a chance to improve the pupils' emancipatory actions but they are not used to thinking ... it is difficult to develop critical thinking. How can one solve this? I think by re-planning the teaching process in the context of their social reality (Teacher 3, School A, second interview).

I observed some changes in my students. They are more critical in their attitudes to environmental problems. So I can say that some changes have occurred. They take more care of their school material. They are developing better relationships among themselves ... but there is a long process to follow. The values which we teach them are different from their families' values and because of this, I feel it is necessary to carry out some activities with the parents ... (Teacher 12, School B, second interview)

In connection with this, teachers at this level asserted that the process of engaging pupils in self-criticism is often thwarted by differences between the attitudes of schools and statements made by the pupils' families. Such teachers stated that at school pupils can learn to be critical and acquire some notions of citizenship but at home children face difficulties in putting them into practice. The teachers claim that some parents are not interested in their children becoming critical. In other words, the teachers felt that the parents' expectations about teaching and the learning process are based on traditional values. What is taught at schools is not always incorporated by the children into their lives or accepted by parents. This means that although pupils learn to broaden their attitudes and skills, they are

not encouraged to do so at home. Parents often expect their children to be given conventional teaching and they have some difficulties in understanding a more complex practice which goes beyond a simple reproduction of knowledge. As a result, the teachers concluded that the pupils were checked in their attempts to grasp ideas such as citizenship values, social justice and critical thinking by a lack of stimulus from their parents. However, this does not mean these teachers reject the chance to consolidate environmental education when it is connected with conceptions of citizenship although they considered it to be hugely challenging.

Hence, although the teachers emphasised the fact that creating a critical environmental education at schools was difficult, they recognised the importance of overcoming a system of education based on factual knowledge through the development of a different kind of teaching. In relation to environmental education, they acknowledged the importance of emancipatory actions aimed at bringing about a more balanced environment linked with citizenship and notions of social justice.

- **A fuller comprehension of emancipatory environmental education**

Unlike teachers who obtained a stronger sense of environmental practice, the teachers at the third level possessed a more complex sense of environmental education connected with ecological citizenship education and aimed at establishing social justice. Fourteen out of the 32 teachers ended the process of the action research by making considerable progress in their understanding of environmental education conceptions, curriculum and practice. Two of these teachers moved from a position of little engagement at the beginning of the research, eight from partial engagement and four from major engagement.

The fact that these 14 teachers were able to conduct a kind of practice which was committed to emancipatory values and aimed at transforming the environmental reality of their students can be regarded as a significant achievement in the course of the research. The matter of putting into effect emancipatory actions through a critical thinking which is based on social justice and ecological citizenship became an important goal during their practice. These teachers believed that environmental education meant more than simply preserving the environment or the establishment of some rules of conduct to shape the behaviour of young people. Indeed, the teachers welcomed environmental education as a

broad, interdisciplinary concept which allowed the pupils to react to society's social contradictions and find sustainable solutions to their problems.

These teachers mentioned some important changes which occurred during their professional development. The first of these changes which most of them drew attention to was the importance of working together. These teachers took the position that cooperation among participants was an essential prerequisite for achieving a satisfactory practice. The participants were in favour of mobilising the whole school in environmental actions since they regarded this as an essential way of bringing about a kind of environmental education which was concerned with the students' real lives. The practice of cooperation which was fostered by the teachers played a fundamental role both in their reflection and the improvement of their pedagogical practice. It is worth noting that some teachers who had faced difficulties in getting engaged in a shared process (as shown in the last chapter) were able to improve their abilities and establish a more collaborative practice. During the second workshop, these teachers stated that the cooperation process helped them to overcome personal and professional tendencies. By sharing opinions and knowledge, the teachers were encouraged to break away from the 'isolated' forms of teaching which had been established at the schools. For instance, they said that before the action research they used to plan lessons by themselves and face pedagogical problems on their own. However, during the research, this method was supplanted by the involvement of other teachers and parents.

With regard to the relationship between teachers and parents when discussing environmental projects, some of the teachers obtained good results and succeeded in involving parents in the pedagogical practice. An example of this was School B where a successful contribution was made by the parents who offered some alternative ways to improve the environmental conditions of the stream which surrounds the neighbourhood. In addition, the participation between Teacher 7 and the parents at School C was of great value in evaluating the practice of environmental education. As mentioned in Chapter 7, this teacher organised a project to investigate the ecological impacts of the unsystematic urbanisation process. Some parents made some interesting comments about this project:

The school has done a very good job in helping to improve the knowledge of the students and valuing the environment in which we are part. (Parent 1, School C)

The project about environment [environmental education] enabled him [the son] to broaden his horizons and realise that nature is the locality where he lives. As well as this, nature depends on us to care for it and ensure we pass it on to future generations. (Parent 2, School C)

I think the project has achieved good results but there are a lot of problems to be solved particularly in relation to the absence of a sewage system. This situation needs urgent attention. (Parent 3, School C)

(Parents' evaluations of the environmental education project. From Teacher 7, School C, field -diary)

The teachers declared that the way they used to teach environmental education had changed considerably. Whereas they had previously only practised environmental education in a limited way, as a result of the research they now realised that there was a need to connect environmental issues with notions of citizenship. They took an important step towards ecological citizenship when they replaced the fragmented practices of the past which were largely confined to focusing on conservationist perspectives as a means of interpreting nature in a social context. The spreading of environmental education on the basis of a critical perspective required a real interaction between the contents of the curriculum and teaching strategies which are designed to solve the problem of the environmental conditions of the students. Thus, environmental problems were no longer regarded as individual problems but as social and political 'exertions'. The following examples demonstrate some of the ways that the teachers evaluated the process:

I used to have a narrow conception of the environment. That is, for me, environmental education only referred to taking care of nature – preserving the environment. So, I realised that environmental education is more than this. I mean, it is a broad subject. Environmental education involves notions of citizenship, that is, it is related to duties and rights. So I can see it is a wide-ranging conception. For sure, I've changed my ideas a lot. Before the development of the project [action research], I thought that environmental education was only related to teaching about forests, for instance. That is, about the environment itself. But now I realise that the environment involves other things such as citizenship, social integration, etc. It is an interdisciplinary topic. (Teacher 9, School A, second interview)

I think what changed was the way I used to develop environmental education. I used to teach environmental education by simply transmitting knowledge – Scientific contents. It was very difficult at the beginning to break away from this kind of practice but I

tried to adopt a perspective of constructing knowledge with my students from their realities. I think my class made great progress [in terms of gaining a critical understanding of environmental problems]. I think it would be a good idea to go on with the project next year. (Teacher 10, School B, second interview)

I've learnt a lot from the research ... my conception of environmental education has broadened. Before, I used to have a simplistic vision of environmental education. Before the research I only thought of nature as a separate entity [by itself]. Nowadays, I can see that is not necessary to be in an ecological park to promote environmental education. I think I changed my way of working in environmental education. Before, I used to transmit to children my knowledge ... it was undertaken in an isolated way ... Our first contacts [between the researcher and the teacher] enabled me to study more about environmental issues ... the contact with other teachers particularly with Teacher 4 contributed a lot. When you [the researcher] carried out the first interview I'd started to reflect about environmental education practice<sup>7</sup>. I can realise that when I was teaching about the environment it was as if we, my pupils and I, were in front of a picture contemplating it. It wasn't real. It was a very isolated practice. So I realised that something had to be changed. I felt it was necessary to achieve something more dynamic and real. (Teacher 1, School C, second interview)

For sure, before we embarked on this research, the notion that we had of environmental education derived from a traditionalist standpoint – it was to take care of nature. During the research we observed how widespread environmental education could be, when seen through a critical perspective. We used to teach environmental education through a perspective that concentrated on the preservation of nature. We taught the contents through books which were unrelated to the concerns of students' lives. So the action research gave us a notion which we don't have enough environmental education. (Teacher 4, School D, second interview)

Moreover, most of these teachers admitted that their perceptions of environmental education improved in the way they came to understand how to transpose the content of the curriculum, from being just an end in itself to acquiring a reliable ecological citizenship purpose. Indeed, some of them mentioned that environmental education was connected with a wide perspective of understanding nature in the light of social contradictions found in student communities. The actions were interpreted in a different way from what had formerly been the case in dealing with environmental problems. An example of this was the way that some teachers from School A handled the topic of recycling. Unlike those teachers who used the practice of recycling as an end in itself, these teachers endowed it with a

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<sup>7</sup> The first interview was undertaken with the aim of describing the teachers' conceptions with regard to environmental education and not discussing environmental education with them. However, the interviews and conversations provided this teacher and some others with their first positive insights into the significance of the research.

social meaning. Instead of asking students to bring recycled material to be stored at school and then sending it on to be recycled, they suggested doing something else for the children. A group of teachers planned a project called '*When does rubbish become art*'. The main goal of the project was to engage children in creating art-objects from recycled material. Of particular interest in the project was the way children created toys. In view of the fact that many of these children do not have access to buy industrialised toys, these teachers' initiative served a very useful purpose in providing them with some fun. The researcher was able to observe the happiness the children experienced when playing with these toys during the break-time. Then the teachers decided to extend the project. The idea was to collect recyclable materials and offer them to the students' families who used to collect and sell these materials as a way of earning a living. The teachers hoped to add a social dimension to the recycling practice by setting up some social and sustainable alternatives to the rubbish collection. The main idea was to teach children that: a) reprocessing rubbish is a necessary task to avoid wasting natural resources b) recycling activities represent a new form of occupation by providing jobs for many people. In evaluating this project one of the teachers expressed the following opinion:

Before, children used to bring materials to the school as an end in itself, that is, they didn't have a social intention... I think now they are not bringing materials to the school in a casual way. Quite the opposite. I believe that children have understood the social dimension of the process – the important context that involves the whole process of recycling. (Teacher 2, School A, second interview)

Finally, the teachers were impressed by the results obtained from the practice of environmental education and ecological citizenship which had a significant impact on the students' learning-process. In changing the way that they used to teach, these teachers were aware of the beneficial effects their actions had on helping them to learn about environmental education. Some teachers stated that environmental issues became more attractive to children once the contents focused on interpreting and finding solutions to their poor environmental conditions. An example of this was the results of the annual review undertaken by students from School A. The pupils thought the environmental education classes were the most worthwhile activities undertaken in 2003. Another example of positive outcomes was observed during the setting up of the second workshop in which some students from School D were given the chance to report on their positive experiences

of environmental education. This assessment of environmental education provided an opportunity to improve the ability of the children to understand environment through a different perspective, which was far from what they used to do. The importance of taking part in the affairs of the community gave the teachers and pupils, particularly the children who live in poor conditions, a new understanding of their social and environmental situations.

#### **8.4 Discussion**

Of the teachers who showed a stronger and fuller understanding of their practice, 63% of the participants acquired a new understanding in the way it brought about an environmental education addressed to ecological citizenship and social justice principles. If the limited time for the research is taken into account, the results can be regarded as being positive on the whole, given the fact that the majority of the teachers (considering the second and third levels of teachers' comprehension of emancipatory environmental education) derived considerable gains from their involvement in the research. In addition, when one recalls the restricted ways in which teachers formerly understood environmental education (as shown in Chapter 6), the results met the requirements of the research (to bring about emancipatory actions) in an adequate and satisfactory way. Indeed (as discussed in Section 8.2 and 8.3), in real situations changes require a dynamic process of construction and reconstruction of the knowledge in which people are not inert elements of the process. Rather, they are active agents who are able to make progress in the course of actions undertaken in everyday life.

In practical terms, this means that any analysis centred on social and critical interpretations must go beyond the immediate results of the research. Indeed, an understanding of the process of empowering teachers must take into account the potential outcomes to be achieved in the future. Unlike to approaches that are strictly aimed at observing and explaining the immediate results of the phenomenon, the goal of critical theory is to bring about an intellectual reflective view of thinking and action through a continuous process. Thus, the results of this study have not ended but encompass potential outcomes relating to environmental education and ecological citizenship. Consequently, further results related to the development of critical thinking from action research may emerge in the course of time. Perhaps, more important than this is the fact that in a broad spectrum the participant teachers were involved for the first time in a kind of study that directly led them into



identifying problems in their teaching. Nonetheless, one important aspect that must be acknowledged is that for the first time these teachers became active agents in a research process. Their teaching acquired a new meaning insofar as it enabled them to turn into:

... theorists, articulating their intentions, testing their assumptions, and finding connections with practice (Goswami and Stillman cited in Fien, 1992: 269).

Engaging teachers in the recreation of teaching and learning processes includes undertaking efforts to improve direct contributions to classroom practices. Indeed, a very encouraging aspect of the research process was the fact that the results of the teachers' actions centred on real-life situations rather than promoting a narrow conceptualisation of the contents in the curriculum and gave them a new conception of pedagogical practice in environmental education. The idea of allowing problem-solving strategies was incorporated as a fundamental ingredient in the research. They served to develop the students' critical skills and provided them with the knowledge required to empower them to think and rethink about their environmental conditions. This was a 'facilitator' process that provided an education which centred on the construction of students' awareness about environmental issues based on what Habermas' theory defines as emancipatory knowledge through communicative action. In other words, by attempting to overcome a kind of explanatory teaching in which the teachers were mere responders to knowledge, they became involved in an environmental education based on social and political efforts and associated with an ideological review of their pedagogical practice.

Furthermore, by attending to the principles of an action-oriented project, most teachers gained fundamental insights into ways to bring about autonomous practices at schools. Their engagement in producing emancipatory knowledge moved them to break away from certain kinds of traditions found in the schools. For instance, at the end of the research process, most participants took it for granted that there should be cooperation between teachers and an opportunity to share opinions and knowledge, as these are important elements in a good teaching practice. Indeed, what was noteworthy was the self and group commitment of most teachers to applying their knowledge and skills to environmental actions in an innovative way.

Emancipation occurred when democratic participation through debate became the main feature of the teaching project. In addition, to some extent these teachers' views can be connected to what Marx claims as a libertarian process which is acquired through political engagements in the social world. In fact, by becoming more critical in the way they analyse the social contradictions inherent in environmental problems through a concrete involvement in social life, these teachers practised what Freire describes as critical pedagogy.

In fact, most of the teachers showed a more complex sense of emancipatory environmental education as a result of this study and also gained a new understanding of environmental education together with a perspective of ecological citizenship and social justice. Most of the participants involved in the process supported the initiative to connect environmental practices in the classroom with students' real conditions through emancipatory actions which they regarded as a pedagogical instrument to reconstruct the social reality experienced by students. These teachers strongly supported the position that environmental education is much more than an inductive training. Furthermore, the results of the implementation showed that environmental education, when linked with social interests and regarded as something more than the simple preservation of nature, must be a fundamental ingredient in attaining ecological citizenship and social justice for the people.

Moreover, teachers' practices carried on attempting to promote sustainable actions and ecological citizenship and this led them to realise the importance of teaching an environmental education which is centred on encouraging positive attitudes on the part of the students together with a heightening of awareness, values and responsibility when considering environmental conditions. In developing a socially critical education which was concerned with problems from the students' local community, the teachers held a position in which the teaching process was transformed from an 'objectivist' to a 'humanist' perspective. The opportunity to connect students' personal experiences with teaching processes represented for them a real prospect of promoting the growth of an effective environmental education based on sustainable actions. For instance, the actions and reflections of the teachers enabled them to obtain an essential insight into action research, that is, they realised that the conditions of poverty experienced by a large number of their students resulted from structural problems rather than from particular

disinclinations to produce better conditions of life. In the light of this understanding, the teachers' practices were strategically focused on environmental actions concerned with empowering students to find solutions to environmental problems. Clearly, at the end of the process the teachers recognised that the pupils were powerful agents in the task of improving social reality in the future.

The main function of critical pedagogy is to bring about a kind of teaching that is connected with real life situations and concerned with ideological criticism which makes it possible to demystify some of the central values of education and society. However, demystifying solid structures of society and breaking away from certain kinds of educational tradition is not a linear or fast-moving venture; it rests on a continuous process of acting, reflecting and acting. This implies understanding the pedagogical practices of environmental education through cognitive factors which envisage education as being based on ongoing dialectical circumstances. More than this, education must be understood as a process of praxis in which the development of action and thinking is more than a concluded announcement. In other words, breaking away from fragmented practices at schools through the development of emancipatory actions towards ecological citizenship and social justice is not an instantaneous achievement. Rather, it is based on progressive undertakings experienced by people in concrete real life.

Environmental education is connected with the development of critical thinking and emancipatory actions as a response to a new culture of argument at school. This contrasts with what is described as an 'answer' culture regarding environmental problems and is not a simple process. It demands personal and group engagement and commitment. In particular, it requires that we understand people (teachers, students and parents) as active generators of knowledge. It is completely different, for instance, from traditional perspectives in which the teaching process tends to be behaviourist and reproduce particular and instrumental values. This can explain to a certain extent why 37% of the teachers involved in this study maintained their positions with regard to a more restricted and centralised perception of environmental education practice. These teachers had difficulties in overcoming traditional teaching and moving on to more sophisticated practices of teaching and learning. However, these difficulties cannot be understood as an isolated factor; it is necessary to understand differences in the ways teachers produce knowledge

and obtain skills through a multidimensional perspective. Indeed, the distinctions between the teachers (whether they had a weak, strong or complete understanding of developing emancipatory environmental education) must be understood through the internal and external contradictions of the research process. This raises a question that emerges from an understanding of the research process: *Why did some but not all of the 32 teachers make so much progress in their thinking and acting?* This is the subject of the conclusion chapter of this study.

### **8.5 Conclusion**

This chapter has reviewed and discussed the views of the teachers about the development of emancipatory environmental education. It aimed at analysing the results of the implementation of the research project and examined the evaluation of the process carried out by teachers. The outcomes arising from the analysis of the process showed that there were distinctions concerning the ways teachers understood environmental education and the ways it connects with ecological citizenship and the promotion of social justice. The next chapter will analyse and discuss the final results of the implementation with regard to the thoughts and actions of the teachers about environmental and emancipatory environmental education.

## **Chapter 9**

### **Changing practice: exploring the results of the research and its relation to emancipatory environmental education, ecological citizenship and social justice**

#### **9.1 Introduction**

Chapter 9 addresses the fifth research question of this research:

- *To what extent did the environmental education practice of the teachers change as a result of their professional development?*

This chapter is concerned with the last cycle carried out in this study – the (re)planning of environmental education activities undertaken by teachers in the schools after the evaluation phase of the research. It seeks to analyse the results of implementing this and the impact it has on the practice of emancipatory environmental education linked with ecological citizenship and social justice by the teachers. The aim of this chapter is to describe the effects of this piece of action research on the teachers' commitment to (re)plan environmental education actions in the schools. The second part concentrates on the researcher's reflections on the process of changing practice undergone by the teachers throughout this research.

The researcher attempted to discover the outcomes of the research with regard to the extent of the teachers' commitment to emancipatory environmental education by employing participant observation, holding meetings at schools and conducting an audit of their projects and informal conversations. These methodological instruments were used to obtain a considerable account of information which helped the researcher to gauge her expectations about the positive and negative impacts of the research on the changing practices of the teachers. In a more specific way, they were employed to examine the results of the action research in classroom practices after the evaluation cycle of the research. As a result, the researcher established contact with teachers and observed the effects of the research on their teaching practice by visiting the schools and holding meetings there. As well as this, she had a number of informal discussions with the teachers which aimed at identifying what advantages there were for the schools in supporting the development of environmental activities by the teachers. By visiting the schools, the researcher had an opportunity to take part in conversations with the majority of the teachers

involved in the research. In addition, she made contact with the deputy head teachers in the schools to gather supplementary information about what intentions the schools had to support teachers in their efforts to encourage environmental activities during the term.

Given the fact that action research occurs in cyclical stages, progressing from action to reflection, the idea of amendment or (re)planning is essential within the process of changing practice. For this reason, the (re)planning of the activities of this research provides conclusive evidence of the results of their professional implementation. Indeed, the teachers who acted as practitioners in the research were involved in a complex process in which they planned, took action and evaluated their actions. Generally speaking (as demonstrated in Chapter 8), to some extent, the teachers had an opportunity to improve or change their teaching practice. Even in the case of those teachers who achieved a weak comprehension of emancipatory environmental education, the research succeeded in bringing about some qualitative changes. An example of this is the fact that even though they disagreed with some principles of critical theory, the teachers who had a poor idea of action research still managed to assimilate the importance of environmental education at schools. Thus, this chapter is an attempt to investigate the general impacts of the research on the participants together with the changes apparent in their practice from the evaluation phase to the conclusion of this study.

## **9.2 Revisiting the environment of the schools**

Six months went by from the setting up of the second workshop on October 29<sup>th</sup> 2003 to April 1<sup>st</sup> 2004 when the research was officially concluded. In March 2004, the researcher paid visits to the four schools involved to find out the extent of the long-term impacts of the professional development on the practice of teaching environmental education. The researcher's main aim was to obtain a general account of the extent to which schools and teachers intended to expand or reduce their environmental activities after the conclusion of the research.

With regard to the schools, it was clear to the researcher from conversations with the deputy heads, that the schools were keen to extend environmental education projects in a more intensive way. As an example see the following statement from School A:

The school is very satisfied with the results from teachers' environmental education projects... we are going to extend the projects. In reality, we've already had some planning concerning the activities of environmental education. Teachers really enjoyed environmental education classrooms last term... Teachers decide to keep the majority of their projects. For instance, a very good project was the '*When does rubbish become art*' [production of toys by children] ... we really appreciate this project and others. The majority of the projects were very good. (Deputy head from School A, researcher's field diary, 22.03.2004)

On the whole, the four schools were in agreement insofar as they supported teaching and learning strategies to do with environmental education actions. The schools welcomed the results of the teachers' practice which they regarded as a major achievement in bringing about environmental education. In fact, the four participant schools encouraged the continuity and extension of the recommendations put into practice by the teachers during the research. In the case of the three of the four schools, environmental education was considered as providing very important insight into understanding that the environment is a significant field of social action (as will be described in the section that follows). The fact that the schools intended to maintain and support the teachers' projects was considered extremely important by the researcher as even though environmental education is a compulsory subject in the national curriculum, environmental topics are not always taken seriously during the classroom lessons.

As far as the teachers were concerned, most of them showed an interest in continuing with their practice of environmental education when it was connected with the promotion of ecological citizenship and social justice. The researcher observed that many of those teachers who displayed a weak sense of how to bring about emancipatory environmental education were at the same time willing to understand and carry out environmental education as an important issue. An example of this was the fact that many of these teachers had been engaged in discussing their projects at school with other teachers. If they encountered some difficulty in allowing more complex practices to occur, because these bordered on political and social issues, they still displayed a willingness to discuss and work collaboratively with other teachers. The fact that these teachers were keen to plan their activities together is indicative of the fact that at least the first shoots of change had occurred in their teaching practice.

The teachers who showed either a stronger or a fuller comprehension of emancipatory environmental education realised that their efforts to achieve a good practice constituted an important task. During the evaluation cycle of the action research, many of them attached great importance to expanding environmental education in the following school terms in a more intensive way. Some of them had already enthusiastically prepared their timetable which was to be applied at the beginning of the next term. On visiting the schools at the end of the enquiry, the researcher observed that many of these teachers were determined to bring about an environmental education which was connected with values of social equity and citizenship. In the course of conversations with them, the researcher observed that these teachers were concerned with nurturing the skills of the students to allow them to have a critical interpretation of their environmental problems so that they could bring about some changes in their local communities. Their ideas will be recorded below along with descriptions of what schools are planning to do about environmental education. But before embarking on this, it is important to note that the understanding which teachers have of environmental education is concerned with conceptions, curriculum and practice and that this has introduced a new feature into the progress of the research. Indeed, for most of teachers, the action research offered a genuine opportunity to improve their teaching. This is illustrated by the following statement from one of the teachers:

Collective work gave the teacher a chance to review his/her activities. The action research was very important; it made me review some important things. For instance, I realised that the curriculum shouldn't be just presented to the pupils; rather it should be reflected on and adapted to the students' needs. During the research, we teachers observed that children had improved ... because of this, we are going on with the pedagogic plans for action research this term. (Teacher 4, School D, notes from researcher's field - diary, 24.03.04)

The researcher observed an important point which was that most of teachers involved in the research continued working in their respective schools. In fact, only two teachers, one from School A and another from School D, were relocated to other schools within the municipal educational system. In view of the fact that this research has laid great stress on the idea of collective enterprise, the researcher was pleased with the fact that most teachers continued teaching in their respective schools. She thought that if teachers remained at the same school, this could facilitate a process of continuity in the collaboration which most of them had established in the course of the research. If one bears in mind the positive results of the



research in the way it improved the teachers' ability to work together in a participatory spirit, keeping the same groups of teachers together at schools was an auspicious sign of the potential for environmental actions in the future.

In addition, it was not a surprise for the researcher to find out through contacts with the teachers that the experience of the research proved to be useful in providing teachers with valuable insights about how to plan their future actions. An example of this arose in the case of School A where most teachers decided to extend the recycling activities which were connected with social actions so as to improve the environmental conditions of the community. Indeed, the school continued with their recycling activities to assist those children's families who collect materials to sell for recycling. The teachers also continued with such projects as the production of toys and art artefacts. In addition, after investigating some of the teachers' drafts of projects they planned, the researcher discovered that they wished to maintain the link between the issues which arose from the environmental education curriculum and the problems experienced by children in their communities. For instance, those teachers who showed a stronger and fuller comprehension of emancipatory environmental education were interested in extending the environmental actions. In general, these teachers' projects were designed to cope with children's health problems which arose from poor environmental conditions in their communities such as an absence of a sewerage system and pollution from factories.

The researcher also observed a considerable level of commitment on the part of the participants in terms of cooperation and participatory spirit. Indeed, most teachers of the School A, including those teachers who showed a weak engagement, decided to plan their activities together so that they could share ideas and experiences. The following extract from the researcher's field-diary illustrates the fact that the teachers intended to share their experiences:

An example of the teachers' commitment to work together was their choice of a mascot which was designed to represent the school's intention to keep to their environmental activities. During the action research, one of the teachers and her students created a mascot to represent the efforts undertaken by people to preserve nature: a turtle. The children found some of these little animals around the school. Although nobody can explain how they appeared there or where they came from, since the school surroundings are not their natural habitat, these teacher's children chose a turtle to be

the mascot of the class. The teacher and students designed a slogan to illustrate the need for environmental education: *"Slow but always taking care of the environment"*. The other teachers from the school were impressed by this and decided to adopt the mascot and slogan as an emblem of the school's commitment to environmental issues. (Notes from researcher's field-diary, 23.03.2004)

Another positive aspect observed in School A was some teachers' intention to involve parents and people from the community to discuss and plan some environmental activities which could be carried out in the community. The teachers stated that the neighbourhood was facing some problems caused by violence and damage to the environment. Some places in the community, such as a little square in front the school and the sports gymnasium, were continually suffering from acts of vandalism. As a result, the teachers decided to invite parents and people from the neighbourhood to the school to discuss some strategies to deal with this situation.

In a similar way, the teachers from School B decided to broaden the scope of their previous school plan. When the researcher contacted the school in March 2004, she found that the teachers had already held discussions about environmental actions. The objectives of the teachers were to draw up new projects through a more centralised perspective that would take into consideration the urgent environmental problems faced by students and people from the community, as well as environmental education curricular issues. For instance, some projects were discussed with the aim of attempting to improve health conditions in the community. These teachers regarded the health conditions of the students as the main issue which had to be faced when considering environmental actions. In fact, the question of finding sustainable alternatives to improve the well-being of the people is a core subject in the Brazilian curriculum with its emphasis on the environment and health conditions. Following the guidelines of this curriculum, the aim of the school is to form a partnership with the Municipal Health Department in order to encourage healthcare in the local community. The main idea was to provide students and their families with easier access to basic health services such as medical examinations, health tests and medicine.

Moreover, the teachers declared that as a result of the environmental actions carried out by the school, a bridge was built over the polluted stream at the end of 2003. The efforts made by the school and parents to persuade the political authorities to build a bridge strengthened

the relationship between the people from the community and the teachers. Clearly, by achieving this important victory on behalf of their pupils, the teachers had a feeling of being more empowered. The following statement from the researcher's field-diary illustrates the importance of this for the teachers, students and community:

During her visit to School B, the researcher observed that most teachers were eager to continue with their environmental actions. One of the Deputy Heads of the school stressed the valuable contribution made by environmental education in the following statement: *"An attempt to improve the environmental conditions of the students started in the school in the form of a project of environmental education. A very important result which arose from putting environmental education into practice, was the construction of a bridge over the stream. This had a number of beneficial effects. First, the risks of accident were reduced. Before this, children were at constant risk whenever they tried to cross the stream. Second, the bridge represents a way of removing the 'imaginary' distance between the two opposing groups of people who live in the community – 'the establishers' and 'the outsiders' ... (see the characteristics of the schools described in Chapter 5). This may not seem much but for these people the construction of a bridge represented a lot because now people who had previously been landlocked lands can walk around freely. This victory was achieved as a result of cooperation between the school and local community. It was a form of political environmental education. We are going on with the environmental education project. We are discussing it a lot".* (Deputy head of School B) (Notes from researcher's field-diary, 31.03.2004)

In the case of School C, the researcher noted that some of the teachers clearly intended to expand their environmental education projects. The teachers identified the topic 'Water' as an essential issue to support environmental education practice at school. The choice of the topic arose from the teachers' commitment to dealing with some problems which they experienced during the research. For instance, the teachers stated that although the school is located in a prosperous place, many students have been facing serious problems concerning environmental sanitary conditions. However, at the time of the visit, the teachers had not drawn up a concrete environmental action project to discuss with the researcher.

This situation was not a surprise for the researcher as it seems that it is a characteristic of most teachers of this school to think deeply about these questions. At the beginning of the implementation, the researcher observed that in School C teachers took longer to make decisions about their projects when it was first implemented. At that time, this situation caused some concern to the researcher. However, eventually the majority of the teachers became progressively engaged in the research. Thus, the researcher's expectation is that

many teachers from this school will extend their teaching so that it becomes focused on the continuation of environmental education projects. Many of these teachers showed great potential, particularly those with a stronger and fuller comprehension of emancipatory environmental education, and were able to attain a good knowledge and improve their skills in carrying out sustainable actions within the social environment of their students.

Particular attention needs to be devoted to Teacher 7 from this school. This teacher (as described in Chapters 7 and 8) organised some very interesting and worthwhile activities with regard to the environmental education curriculum which related to the students' real lives (see description of her planning on page 163). She displayed a noteworthy capacity for organising and recording practice. For instance, at the end of the term this teacher and her pupils produced a significant document about the activities they had developed during the research. The document is organised in the form of a CD and aims at describing and analysing the environmental activities of children. A copy of the CD which included planning, descriptions of the main activities, photographs and reports written by the pupils was distributed to the other teachers from the school, to parents and to some members of the community. It is catalogued in the school library. Although the researcher had no contact with Teacher 7 during her final visits to the school, this teacher had previously announced her intention to expand environmental education activities in the following term.

In the same way, the teachers from School D came to a decision to continue the environmental activities they had carried out during the research. As in the case of School B, the teachers decided to emphasise a kind of environmental education which focused on the health problems affecting children. For instance, a group of teachers planned to connect environmental education in the classroom with a campaign involving students, parents and community to prevent diseases caused by the Dengue mosquito<sup>8</sup>.

In addition, the teachers were seeking to obtain the necessary financial resources to build a greenhouse and improve the conditions for growing vegetables in the school garden. In fact, during the research a very interesting activity was carried out to do this. The main idea

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<sup>8</sup> Dengue mosquito (*Aedes aegypti*) is a kind of insect whose sting causes a serious disease called Dengue. The main symptoms are haemorrhages, fever and physical pain. The Dengue mosquito is usually found in puddles of water.

of the teacher who organised the activity was to encourage students and their parents to cultivate organic fruits and vegetables at home. As these children come from rural areas, the teacher aimed at encouraging them to adopt organic farming methods. She thought that the use of a vegetable garden represented more than a simple acquisition of techniques by the students; as well as this, it incorporated cultural and social values since her project provided children with a means of understanding their culture and local diversity. Unlike traditional perspectives where the vegetable garden is cultivated as an end in itself, this teacher's activity had a social and cultural dimension. Together with her colleagues, this teacher decided to expand this project in the following term. By obtaining a greenhouse at the school, they hoped to involve the parents and the whole community in growing organic plants. The teachers found out that the locality was potentially productive for growing organic plants and they sought to involve students and parents in cultivating plants for consumption by the school and the community. The teacher who is responsible for the garden gave a persuasive argument about the effects of action research on her teaching. She concluded with the following statement:

*The research helped me a lot – our discussions were very important. As a result, I started to value my job at school more. It taught me an important thing which was the importance of the local community as a valuable resource to carry out environmental education. Before this, I thought of environmental education as a subject by itself – not a means of social improvement.* (Notes from the researcher's field-diary, 24.03.04)

This teacher's plan, together with those from other schools, can be considered as a preliminary attempt to construct sustainable activities which are relevant to local and diverse conditions. It is interesting to note that some teachers stated that when at the beginning of the research, teachers asked the researcher to include the topic 'sustainable development and sustainability' in the first workshop schedule, they could not imagine that at the end of the research some new plans concerning sustainability conceptions could emerge from their activities. In other words, what at the beginning was only an abstract idea, at the end of the research was materialised through concrete actions.

### 9.3 Discussion

An important outcome of the research concerned changes in practice resulting from the interest demonstrated by most teachers (at the three levels weak, stronger and fuller) in keeping the idea of planning activities collectively. One satisfactory result which emerged from the research was that the teachers intended to keep to the participatory process of planning. Indeed, the process of reflection and thinking together is a key element in encouraging critical thinking and knowledge. The principle of sharing information and socialising experience can quickly help teachers to focus on their everyday problems, analyse arguments and decide on a course of action. In addition, collaboration between teachers can help them to improve their ability to bring about qualitative changes which depend on a decision-making process and can also help teachers overcome their feeling that they ought to be 'infallible' (see Chapter 7).

The different levels of comprehension shown by teachers in the course of this research is not seen in this study as being an insurmountable obstacle to good practices in environmental education at school. On the contrary, environmental education should be understood as a complex subject which embodies a respect for "individual human diversity" (Chi Kin Lee and Williams, 2001:229). This includes respect for people's ideas and, in the case of this study, the evaluation of different orientations, opinions and experiences. In support of Freire's theory, a dialogue between people is a precious resource for the creation and re-creation of pedagogical settings which are underpinned by human actions. By engaging in communication and argument, the teachers were able to experience different strategies for expanding environmental education. Furthermore, they have had the opportunity to become empowered in the common construction of their pedagogical practices.

If one bears in mind the secluded way in which the teachers in these schools used to plan environmental education activities before the development of action research, the teachers' commitment to planning together represented a valuable gain in terms of changing practice. The concern of teachers to discuss new experiences which are underpinned by divergent perspectives and ideological orientations has provided them with an opportunity to open up a wide debate on the crucial question: *What is environmental education for?* In fact, the idea of respecting individual diversities as regards the way teachers understand

environmental education conceptions, curriculum and practice will be discussed in detail in the final chapter of this study. For the time being, it is enough to underline the fact that it is important for teachers to attempt to resolve the number of disagreement by encouraging good practice at schools.

Linked to the commitment of the teachers to a more collaborative and participatory practice of environmental education is the fact that most of them decided to expand their environmental actions. Clearly, their understanding of the need for emancipatory environmental practice at schools backs up the position of this study which regards teachers as social agents who are able to foster the fundamental ecological principles of citizenship and social justice. Hence, the idea of environmental education as a valuable resource for bringing about social justice in the lives of the students can be applied to the context of this study through the teachers' commitment to continue with their environmental education projects. The expansion of an emancipatory environmental education is an essential requirement for connecting pedagogical practices with principles of global citizenship, social justice and equity (as discussed in Chapters 2 and 3). These principles, that were laid down in the Brazilian National Parameters for the Curriculum (NPC, 1997), embody the idea of sustainable action to improve the environmental conditions of the people. Moreover, given the poor environmental conditions of many Brazilian primary school pupils, the task of introducing a kind of environmental education which is underpinned by sustainable attitudes is an urgent responsibility for the schools to take on. The teachers' activities which were undertaken in this study represent a good example of what kinds of change are possible in pedagogical practice to achieve a satisfactory level of citizenship and social justice.

For this reason, the schools' achievement in expanding the practice of environmental education in the course of the research was highly successful. Indeed, three out of the four schools that engaged in the action research were able to make specific recommendations to go on with environmental education activities. Most teachers realised that there was a need to link environmental education with political action so that students could be helped to improve their environmental conditions. This can be considered as important evidence that education is able to deconstruct some of the centralised practices that can be found in teaching and learning processes. However, changing the practice of environmental

education is a complex task particularly when the efforts to construct a good process of teaching and learning are combined with notions of equity and citizenship. Indeed, the connection between these three concepts (environmental education, social justice and citizenship) are extremely challenging for education.

In fact, education is a powerful means of enabling people to create a more egalitarian society. As far as environmental education is concerned, the results of this study which are to do with changing teachers' practice, have revealed that teachers act as important social agents in bringing about emancipatory education towards a more sustainable world. In attempting to achieve a kind of education which is based on valuing the knowledge and skills of the students, these teachers were given the chance to put into practice a different way of dealing with their students' environmental and social problems. In attempting to do this, the teachers effected an important change in their teaching: their pedagogical concerns about what is taught at school were bound up with the students' real needs.

Furthermore, another challenge in their research was the idea of linking environmental education with the construction of a culture of argument, with the aim of helping students to bring about social changes in their local communities. If at the beginning teachers encountered some difficulties (and some of them showed some resistance) in grasping the principle of a new culture of argument, by the end of the research most of them were more aware of the need for a different kind of relation between education and the production of knowledge in their classrooms. Of course, encouraging critical thinking and emancipatory actions is underpinned by mediations from social life in which people, in this case the teachers, establish different relationships with other people in a social context or in the "lifeworld" to use Habermas' expression. It is a process in which the results are not immediate; rather the effects of the critical thinking are intrinsically tied up with the teachers' capacity to think and rethink their actions. Moreover, this process of mediating actions depends on the social, cultural and historical circumstances in which people are 'inserted'. In this scenario, education and environmental education represent an authentic (but not the only) opportunity to break away from certain kinds of traditional and ideological practices which occur in society. In the case of the participants of this research, most of them managed to achieve a new culture of argument when reflecting on their students' emancipatory actions. The teachers' commitment to a participatory form of



research enabled them to think about their everyday practice and be successful in bringing about critical thinking and emancipatory actions.

Nevertheless, there is still a long way to go before environmental education, ecological citizenship and social justice can be achieved in a meaningful way in these schools. In August 2004, the researcher had a chance to watch teachers from School A and School B on television reporting some of the environmental activities they had carried out at schools. These teachers, particularly in the case of School B, strongly defended the idea of education as being engaged with the students' real lives. In supporting a number of environmental education activities which were connected with ideas about inculcating citizenship, the teachers stated that it was necessary to maintain attitudes which would improve the environmental conditions of the children. However, an intriguing point emerged from this when the school described some activities designed to improve the quality of life and health conditions in the students' community. Although the teachers defended the idea of ecological citizenship and social justice, some of the school's activities adopted distorted positions with regard to the social conditions of the students. For instance, in reporting the outcomes of their actions, some teachers held the view that education, and in this case environmental education, is a kind of 'concession' from the school to the children. By doing this, the impression was conveyed that poor children are relegated to a lower level and 'receive benefits' from others as a gift and not as a right.

In view of the fact that justice is connected with social and structural relations in society (Gewirtz, 1998) and social justice can be regarded as the right treatment of others (Reiss, 2003), a sense of inclusion must be established with the teachers. In fact, this piece of action research included important and progressive discussions concerning the social relationship between teachers and pupils. However, the way teachers understood the nature of a more comprehensive approach with regard to social justice needs to be reviewed. The researcher is hopeful that the learning that they experienced when reflecting and acting can bring about some positive results in their future environmental practice with regard to the trio of: *citizenship, social justice and environmental education*.

To give a summary of this chapter it is important to note that in trying to change their practice of environmental education the majority of the participants gained significant

insights into the best way to construct a new understanding of environmental care. This new understanding, which was obtained by the teachers during the course of this research, embraced the idea that environmental justice and citizenship can be more than a mere conceptual description of sustainable attitudes and ecological ethics. In attempting to disrupt educational perspectives which emphasise the indifference that people have towards environmental and social conditions, this research has concluded that emancipatory environmental education is a feasible aim. Since teaching is a “creative and critical act” and not a “mechanical performance”, in the words of Freire (1997), this research provided a good opportunity to work out a defence of an emancipatory educational practice at schools through environmental education.

#### **9.4 Conclusion**

This chapter has discussed the impact of an action research project which aims at fostering changes in teachers’ practices in emancipatory environmental education. Its aim was to discuss the impact of the research on the teachers and the extent to which it affected their interest in continuing to expand environmental education. The chapter discussed the main argument of this study which is based on an understanding that teachers are essential agents in promoting the idea of ecological citizenship and social justice.

The next chapter will reach the final conclusions of this research. It addresses the question of the researcher’s reflections on the possibilities and limitations of pursuing this research further, while also including some recommendations.

## Chapter 10

### Conclusion

It is worth reiterating David Orr's (2001) query which was quoted in the introduction of this study – "If education is the solution, what is the problem?" – because this has a bearing on the researcher's concluding comments with reference to environmental education and the role of teachers. In truth, the purpose of this study was to argue that teachers are not mere 'sources of knowledge' to transmit facts regarding environmental education practice. Far from this, environmental education and teachers play a significant role in the construction of an ecological and comprehensive fair worldview that combines sustainable alternatives with people's real needs. In this context, environmental education is not an abstraction in the curriculum but is about encouraging environmental values concerning the growth of a more democratic and equitable society.

Thus, even if environmental education is not the only source of change, it is a key ingredient to introducing innovations in the world to address people's needs and provide environmental care. Of course, David Orr's paradoxical question is not designed to corroborate the idea that in general education or environmental education in particular is likely to answer every single problem in society. In reality, Orr, who disagrees with current standardised and technologised practices experienced in education, asserts that there is an urgent need for teaching and learning which can support the insights and reflections of the students themselves. For this reason, education should be an authentic response which is able to offer alternative ways of empowering people to live ecologically. In essence, he argues that:

... only those equipped to discern and think critically will understand both the magnitude of the problems and the choices to be made if we are to create a decent and humane future... For this challenge we need a generation equipped to respond with energy, moral stamina, enthusiasm, and ecological competence. This requires a new understanding of ourselves and our place in nature and in time. This is *the* challenge of education. (Orr's foreword to Sterling, 2001:7 and 8)

The study reported in this thesis backs up Orr's idea that education including environmental education, should be oriented to encourage people to participate critically in the continuous recreation of the world and through praxis-oriented research found an opportunity to

encourage teachers in critical thinking and emancipatory actions towards environmental problem-solving. In doing so, teachers had a chance to experience changes in their pedagogical practices with regard to environmental education knowledge, skills and commitment and thus improve their practice. As a result of this piece of action research, most of the participants were able to move beyond preservationist ideas to more complex understandings of environmental education concerning conceptions, curriculum and practice. The results legitimated the notion of supporting an environmental education connected with concrete environmental problems faced by children. The findings with regard to changes in teachers' practices through the development of skills which can enable them to analyse problems in a critical way and find solutions showed that this study could heighten the significance of teaching in environmental education. In addition, the practice of environmental education undertaken in this research emerged as a social and ecological response to the challenge of ecological citizenship and social justice.

As discussed in previous chapters, the development of environmental education is not a simple undertaking. When challenging the problems faced by environmental education, many authors have become engaged in important discussions concerning its concepts, curriculum and practice. As well as this, there has been an increasing amount of literature about the role that teachers have been playing to refine environmental practice in the last few years. Notwithstanding the considerable progress that has been made, there is still a long way for educators to go before environmental education can become an important subject within curriculum issues. In reality, in everyday practice at schools, teachers have been facing difficulties in carrying out a good practice of environmental education. Despite the efforts of some teachers to carry out environmental education, it is still a marginal subject in curriculum issues, regardless of the terrible environmental problems faced by many children.

In Brazil, many factors can explain the difficulties faced in effectively implementing environmental education in primary schools. As discussed in previous chapters, some schools are inclined to reduce environmental actions to specific practices like organising gardens and recycling. In fact, the prevalence of some standardised processes of education which prioritise the 'dishing out' of content in the curriculum as an end in itself has been one of the major causes of the failures with regard to an effective, and competent,

environmental education concerned with ecological citizenship. A further point, observed earlier in this study, is that the lack or even complete absence of teacher training in environmental education has caused some difficulties in implementing environmental education in the schools. Little has been achieved in schools with regard to environmental concerns, the issue of citizenship and the everyday practice of the teachers.

In the Brazilian educational arena, the difficulties experienced in environmental education are not completely different from the problems experienced in the schools engaged in this research. Generally speaking, this strongly suggests that even when environmental issues are considered in an abstract sense, as a priority in the schools, in practical terms they are relegated to a minor position on pedagogical grounds. For instance, in the case of Ponta Grossa, many children who regularly attend school have been suffering the consequences of environmental hazards. But real attempts to associate the students' environmental conditions and the practice of environmental education were not often found in teaching practice at schools. Of course, this does not mean that teachers completely ignore the social conditions of the children. Rather, it means that issues related to the social and political dimensions are often assumed to be of no educational concern. In other words, the standardised and mechanised principles that govern the practice of education experienced in many primary schools in Brazil tend to distort or disguise problems in real life as if they are set apart from educational goals.

This can explain, to a certain extent, the remaining question which was raised in Chapter 8 - *Why did some but not all of the 32 teachers make so much progress in their thinking and acting?* In reality, this question involves an examination of environmental education and the commitment of the teachers to undertake ethical practices that are concerned with reducing inequalities in society.

The reasons why some teachers made good progress while others showed less improvement when thinking about and taking action in environmental education are related to the different educational positions they adopted with regard to teaching and learning processes. Indeed, the different levels displayed by the teachers which can be categorised as weak, strengthened and fuller comprehensions of emancipatory practices (as described in Chapter 8) are related to the individual experiences of the teachers in collaborative and participatory

research. The differences with regard to the degree of commitment the teachers display towards emancipatory environmental education can be explained by the extent to which they have assimilated the essential values of this research. For instance, by rejecting critical theory and emancipatory participation some teachers proved to be unwilling to accept a different practice in education. The question which arises here is not related to the acceptance or otherwise of the critical interpretation as the best orientation to be used in environmental education but what kind of practice teachers are employing. In practical terms this means that in assuming more restricted practices, these teachers could be endorsing the authoritarian discrimination which is found in some educational sectors that declares poor children as not being able to think, decide and choose for themselves. In this context, the ideas of citizenship and social justice are condemned to being rhetorical labels rather than having practical outcomes.

However, the individual positions of these teachers cannot be analysed independently from the context (general and ideological) in which environmental education takes place in society. For this reason, the individual interests of the teachers are bound up with the way education, including environmental education, is ideologically constructed in the pedagogical arena. Moreover, the predominance of reductionist approaches which inform environmental education practices (e.g. preservationist orientations), and in which nature and society exist as segregated subjects, has been the main way to interpret teaching and learning processes. In fact, one should bear in mind that at the beginning of this study, most of the teachers' ideological positions were based on reductionist environmental education conceptions, curriculum and practice. Indeed, the question of how to deal with these teachers' restrictive approaches was the big challenge of this study. To ensure the ideological objective of the research was fully understood required a lot from the teachers (particularly at the beginning of the research) and was a daunting challenge for the researcher too.

Despite the extraordinary enlargement of critical pedagogy in the Brazilian educational literature after the dictatorial regime of the 80s, many teachers still lack the opportunity to realise more emancipatory positions with regards to pedagogical practices. This is particularly the case of the locus of this research – Ponta Grossa city – where the influence of centralised ways to implement educational policy has, until recently, not favoured the

appearance of more open approaches to education. This may explain why some teachers have experienced difficulty in getting engaged in a socially critical interpretation of education and its relationship with environmental problems. Vestiges of distorted educational models remain that envisage teachers as possessors of knowledge and this sets up barriers for a number of practitioners and limits their capacity to think and prevents them from thinking and act strategically and thus bringing in changes regarding environmental education practice. In fact, some teachers found it hard to regard themselves as practitioners and builders of knowledge rather than being mere dispensers of information. As previously discussed, most teachers used to see themselves as 'executors' of educational policy rather than 'builders' of knowledge who are able to influence environmental education (and other disciplines) and curricular issues. Unlike the teachers who progressively attained an emancipatory practice at schools which involved the reduction of inequality, some teachers showed a determination to maintain their position of keeping to a restricted interpretation of nature and society. However, this does not mean that these teachers are incompetent or disregarded their responsibilities as teachers. Essentially, it means that they cannot see themselves as being social agents. These teachers failed to realise that educational processes derive from social and cultural contexts. In practical terms, this means that they could not understand in full the process of praxis which operates through constant revisions of thinking and acting.

The aim of this study was not to persuade teachers to change their mind by 'imposing ideas' on them. Indeed, the main idea was not to carry out a kind of professional study which was based on technical activities. This is not praxis – it is mechanical rationality where people are not able to see themselves as 'constructors' and to learn through reflection. By contrast, this research has attempted to establish a connection between pedagogical practice and children's social contexts.

This meant that the majority of the teachers gained valuable insights through their contact with the real lives of the students. When involved in the problem-solving area of environmental education, the teachers got the chance to know a little bit more about their students' social and environmental situation. In other words, these teachers acquired a sort of understanding with students when they learnt about their poor environmental conditions.

The children's social reality benefited teachers by making them more sensitive to the need to transform social reality.

If this study has demonstrated that environmental education has regularly had lip-service paid to it in schools, in daily practice it has been treated in an off-hand manner. On the other hand, teachers when encouraged can acquire transformative practices. In this sense, the main goal of the research was to promote discussions that are aimed at encouraging teachers to reflect and conduct practice through a critical enquiry. In this way, a very interesting outcome which was supported by the teachers arose from their attempts to revise their practice. Indeed, when the researcher asked them at 'what time' and 'how' they observed changes in their practice during the research, many of them promptly answered it had been through 'reflection-in-action'. The chance they had to reflect on their practice represented for this study and for them an attempt to transpose narrow interpretations into more complex understandings of educating processes. This meant that the reflexivity about practice allowed them to develop a capacity to observe and analyse changes in everyday classroom practices. By means of this, most teachers had a chance to experiment with what Alex Moore (2004) defines as a reflective practice or reflexivity. Reflexivity is:

... a particular form of reflection which takes the reflective practitioner beyond the immediacy of the here and now by locating reflection within wider personal, social and cultural contexts and thus increasing its potential for productivity. It includes considerations of such matters as the teacher's or student teacher's own historicised responses to situations and events ... to understandings of the impact on students' classrooms behaviours of social, cultural and emotional lives experienced previously and currently inside and outside the school walls ... (Moore, 2004:112)

The capacity for reflexivity acquired by most of the teachers in this research made them more receptive to discovering new ideologies and willing to defy the old positions. When they confronted the contradictions in their social, cultural and environmental context by experiencing them in terms of their students' real lives, they were able to deconstruct some of the cultural and social barriers lying between teachers and students. Thus the usual reserve that teachers feel when they are involved in a teaching and learning process which is unconnected with the students' problems was overcome and replaced with a more realistic practice which helped them understand the behaviour and social conditions of the students better.



### **10.1 Limitations of the study**

Although progress was made and a good deal of success achieved in helping teachers improve their practice of environmental education, some shortcomings were observed in the research. The first related to time-constraints in carrying out the action research. Although very positive results were obtained, the findings revealed some failings in the long-term impact of the research. Had the teachers had more time it is likely the long-term impacts of the research would be greater. In view of the lack of trained teachers in environmental education in the Ponta Grossa municipal system, a more complete and sophisticated professional system could be organised in the schools. However, it is valid to note that this research had to be planned to fit in with the time required to conclude the doctoral programme which the researcher took part in: a kind of research which required more time than was available would have been inappropriate for the completion of a doctorate. In fact, this research makes clear that the process of changing teachers' practices was an important starting-point in offering a more complex interpretation of environmental problems and environmental education in primary schools.

The second limitation of the research was the problem of carrying out action research in only four case studies. In fact the restricted number of schools used to carry out the main research imposed some constraints on understanding the general context of environmental education in Brazilian primary schools. Indeed, the findings correspond to teachers' practices in a specific context. But although it is possible to observe shortcomings in obtaining a more general understanding, the research brought about a deeper understanding of these four schools. Moreover it is important to observe that, to a certain extent, these detailed observations can be applied to a broader context to understand teaching practices of environmental education.

The third limitation concerns the spatial context of the research, the fact that all four case studies were conducted in Ponta Grossa city in Parana state. In fact, this research provides a coherent picture of teachers' practices in the environment where the research was undertaken. However, the study may seem too narrow for those seeking a broader view which is representative of Brazilian primary schools throughout the country. Given the fact that Brazil is a huge country in terms of geographical area any research that seeks a more general view should realise that this would require immense resources to undertake the

research such as the involvement of a large group of researchers to help in the inquiry and considerable financial backing.

The fourth constraint was the lack of expertise among the participants to enable them to carry out a participative and collaborative research. Implementing a plan that had been designed to include critical and emancipatory interests was more than an innovative goal for the practitioners. Indeed, to a certain extent it was a courageous venture, particularly if one takes into consideration that the constraints caused by the lack of expertise of the participants, included here not only the teachers but also the researcher. The researcher, who is a higher education teacher, had, prior to this research, acquired some proficiency in participatory studies involving community issues and the working classes but the experience of carrying out a more sophisticated enquiry, such as that required in action research, was a new enterprise for her. If a lack of experience on both sides (i.e. the researcher and teachers) meant that a good deal of effort was required to overcome the barriers and contradictions inherent in the process, at the same time, this allowed the construction of a fruitful scenario involving professional apprenticeship.

## **10.2 Recommendations**

In conclusion, some general and particular recommendations can be made to allow a more intensive practice of environmental education in Brazilian primary schools. The general recommendations can be outlined as follows:

- It is not enough that environmental education is officially recognised in the curriculum.
- It is necessary to formulate new support initiatives, which encourage critical thinking in relation to environment.
- It is essential to encourage critical thinking, which can facilitate a new culture of argument and a new democratic culture both in school and in society.
- It is of crucial importance to clarify that the link between environmental education and citizenship in a political perspective is needed to enhance human and social potential with regard to the environment.
- Above all, it is essential to forge a link between environmental education and social justice. This relation, which is influenced by moral and ethical values, can bring about a new quality of life for the people of Brazil.

These general recommendations lead to four particular recommendations addressed, respectively, to the Brazilian Government, the Education Department of Ponta Grossa city, the schools concerned and the participant teachers of this research.

#### Recommendations to the Brazilian government

The process of environmental education at schools should be encouraged through a continuous organisation of environmental and educational policies which would lead to a considerable number of environmental actions in primary schools. These actions must pay special attention to poor children and their local environment in the growth of ecological citizenship and social justice. There is a long way to go from what is officially established in NPC (1997) regarding environment and ecological citizenship to achieve real concretisation of a more equitable Brazilian society. Indeed, to a plenty achievement of NPC (1997)'s goal regarding environmental education there is a need for real change from the Brazilian government. Indeed, a special recommendation concerning the Brazilian government refers to undertaking efforts to construct and legitimate the development of political actions able to implement effectively the practice of environmental education at school and in general society.

#### Recommendation to Education Department of Ponta Grossa city

There is a need to increase the number of trained teachers in environmental education who are concerned with students' real needs and problem solving. In addition, there is a need to implement political struggles to develop an education and environmental education concerned with the promotion of more open processes of teaching and learning. Through this, education can overcome 'narrow perspectives' regarding pedagogical practice and become an education able to promote children's capacity to be able to decide and choose their future for themselves. Along with this, a further recommendation is the promotion of a more intensive training in environmental education in all schools of the municipal educational system of Ponta Grossa. Through this, it will be possible to deepen the debate around the theory and practice of teaching environmental education.

Also strongly recommended is the need to stimulate the implementation of relevant research with regard to pedagogical practice of environmental education. The lack of

research focused on Ponta Grossa about environmental education has been a difficulty faced by teachers when hoping to improve their theoretical background in terms of teaching and learning. This research was a good opportunity to enlarge the debate about teaching and learning practices with regard to a more equitable society based on the development of environmental issues. However, it is necessary to increase teachers' opportunities to discuss and experiment with new pedagogical practices at school.

#### Recommendations to the involved schools of this research

With regard to the schools of this research an important recommendation needs to be made. There should be a commitment to supporting environmental actions at school that seek to increase the growth of emancipatory and participatory environmental education. The link between the implementation of an emancipatory education and students' real lives can strengthen the promotion of a different type of teaching concerned with breaking the reproduction of isolated practices which often reproduce the status quo that often dominates the environment of schools.

If schools show more political engagement teachers can be engaged in the construction of a new reality at schools concerning the practice of environmental education and pupils' real needs. In addition, the promotion of participatory and collective activities at schools can be a good opportunity to improve the quality of practice of the teachers. Sharing ideas and experiences proved to be a good experience for the teachers in this research. In this sense, an important recommendation refers to the schools' commitment to a participatory pedagogical practice. The support from schools to teachers is a *sine qua non* condition for the development of more sophisticated practices based on concrete environmental problems experienced by pupils. This should be seriously considered as a prominent achievement to be realised by the deans and deputy heads. Indeed, teachers should be encouraged to produce knowledge and not merely to reproduce standardised practices in their classrooms.

#### Recommendations to the participant teachers of this research

Considering that for this research teachers and education play a fundamental role regarding environmental problems the development of environmental education practice should be able to create new public and social spheres where pupils feel themselves as subjects and not merely objects in the classroom. In this sense, there is a need to encourage an

environmental education pedagogical practice that is relevant to the actual experiences of students in their local communities.

Such a practice will represent a profitable commitment to the achievement of social justice and ecological citizenship. In this sense one central recommendation needs to be made: to promote the growth of environmental education centred on educational strategies concerned with teaching and learning processes able to encourage students' participation and decision-making in relation to environmental care.

## References

- ADAMS, W. (1999) **Sustainability** in CLOKE, P. & CRANG, P. & GOODWIN, M. *Introducing human geographies*. London: Arnold.
- AL-NAKI, K. (2001) **Developing Environmental Education in Kuwaiti Middle Schools: an Islamic Perspective**. Vol.1, thesis submitted for the degree of Doctor of Philosophy. Institute of Education. University of London.
- ARMSTRONG, F. AND MOORE, M. (2004) **Developing inclusive practice and transforming culture**. In: **Action research for inclusive education**. Changing places, changing practices, changing minds. London: Routledge Falmer.
- ARMSTRONG, F. AND MOORE, M. (2004) **Action research for inclusive education**. Changing places, changing practices, changing minds. London: Routledge Falmer.
- BOFF, L. (1996) **Ecologia, mundializacao, espiritualidade. A emergência de um novo paradigma**. São Paulo: Atica
- BONNE, M. (2005) **Alternative administrative theories for the new age: reflections on critical theory and chaos theory**. Southwest Texas State University.
- BONNETT, M. (2004) **Retrieving nature. Education for a post-humanist age**. UK: Blackwell Publishing.
- BRANDENBURG, A. (1999). **Agricultura familiar, ONGs e desenvolvimento sustentável**. Curitiba: Editora UFPR.
- BRASIL (1981) **Politica Nacional de Meio Ambiente**. Republica Federativa do Brasil. Brasilia
- BRASIL. (1996) **Parametros Curriculares Nacionais**. Meio Ambiente. MEC.
- BRASIL (1998). **Constituicao Federal**. Republica Federativa do Brasil. Brasilia
- BRAUN, R. (1992) **Environmental education and training in Brazil**. Training discussion paper. Discussion paper no.4. Geneva: International Labour Office
- BUDDS, J. (1999) **The role of EE in addressing environmental problems in Squatter Settlements: case study of Iguarape do Quarenta, Manaus, Brazil**. Institute of Latin American Studies. Msc. Environmental issues in Latin America
- CARR, W. and KEMMIS, S. (2002) **Becoming critical. Education, knowledge and action research**. London: Routledge Falmer.
- CEE (1970) **Environmental Education**. Report of the Council for Environmental Education no. 9, presented to the Standing Committee of "The countryside in 1970", London.

CHI KIN LEE, J. & WILLIAMS, M. (2001) **Researching environmental education in the school curriculum: an introduction for students and teacher researchers**. Great Britain: Cambrian Printers Ltd.

CLARK, W.C. and KATES, R. and McGOWAN, A. and O'RIORDAN, T. (2002) **Johannesburg and beyond** – Editorial. *Environment*. Sept, 2002. [www.findarticles.com/p/articles/mi\\_1076/is\\_7\\_44/ai90702211](http://www.findarticles.com/p/articles/mi_1076/is_7_44/ai90702211)

CNS (2000) **Chico Mendes**. <http://cnsnet.org.br.chicomendes>

COHEN, L. and MANION, L. (1989) **Research methods in education**. London: Routledge

CRESWELL, J. (1998) **Qualitative inquiry and research design. Choosing among five traditions**. London: Sage Publications

DELAMONT, S. (2002) **Fieldwork in educational settings. Methods, pitfall and perspectives**. London: Routledge

DRYZEK, J. (2002) **Constitutionalism and its alternatives**. Text prepared for presentation at the Social and Political Program. Workshop on Democratic Theory: The Canberra Papers- date 27.03.2002.

EDWARDS, G. & KELLY, A. (1998) **Experience and education –towards an alternative National Curriculum**. London: Paul Chapman Publishing

ENDRES, B. (1996) **Habermas and critical thinking**.

<http://www.ed.uiu.edu/EPS/PESyearbook/96/docs/endres.html>- date 12.05.2003

FERREIRA, A. (1987) **Movimentos sociais no campo** in BONIM et al. **Movimentos sociais no campo**. Curitiba: Editora UFPR.

FIEN, J. (1992) **What kind of research for what kind of teaching? Towards research in geographical education as a critical social science** in HELL, D. (Ed) **international perspectives on geographic education**. University of Colorado at Boulder.

FIEN, J. (1993) **Education for the environment. Critical curriculum theorising and Environmental Education**. Australia: Deakin University

FIEN, J. & HILLCOAT, J. (1996) **The critical tradition in research in Geographical and Environmental Education research** in WILLIAMS, M. **Understanding Geographical and Environmental Education**. London: Cassell W. House.

FINCH, H. and LEWIS, J. (2003) **Focus groups**. In: Ritchie, J. and Lewis, J. **Qualitative research practice**. London: Sage Publications.

FIRTH, R. (1995) **Postmodernity, rationality and teaching environmental education.** *International Research in Geographical and Environmental Education*. Vol.4, no.1, pp.44-64

FOSTER, J. (2001) **Education as sustainability.** *Environmental Education Research*. Vol.7, no. 2. London :Carfax Publishing

FREIRE, P. (1993) **Política e educação.** São Paulo: Cortez

FREIRE, P. (1996) **The pedagogy of oppressed.** London:Penguin

FREIRE, P. (1997) **The pedagogy of hope.** New York: The continuum Publishing Company.

FURTADO, C. (1976) **Economic Development of Latin America.** Cambridge: Cambridge University Press

GAUDIANO, E.(2000) **Environmental Education.**  
[www.vusst.hr/ENCYCLOPAEDIA/environmental\\_education.htm](http://www.vusst.hr/ENCYCLOPAEDIA/environmental_education.htm)

GEWIRTZ, S. (1998) **Conceptualizing social justice in education: mapping the territory.** *J. Education Policy*, Vol.13, no.4, London: Taylor & Francis Ltd.

GHON, M.G. ( 1995 ) **Cidades, ONGs e acoes coletivas: novas parcerias, atores e praticas civis.** Volume 9,no.2 Sao Paulo: SEADE

GIBSON, R. (1986) **Critical theory and education.** London: Hodder and Stoughton

GOTCH, C. & HALL,T. (2004) **Understanding nature-related behaviours among children through a theory of reasoned action approach.** *Environmental Education Research*. Vol. 10, Number 2, May, Hampshire: Carfax Publishing.

GOUGH, A and GOUGH, N (2003) **Decolonising Environmental Education Research: Stories of queer(y)ing and destabilising.** Draft presented at University of Bath, 06.08.2003 [www.bath.co.uk](http://www.bath.co.uk)

GRUNDY, S. (1996). **Towards empowering leadrship: the importance of imagining.** In:ZUBER-SKERRITT. *New directions in action research*. London: Falmer Press.

HABERMAS, J. (1983) **Conhecimento e interesse,** in *Os pensadores*. São Paulo: Abril Cultural.

HARVEY, D. (1998) **Marxism, metaphors and ecological politics.** *Monthly review*, Volume 49, number 11

HMI (1974) **Environmental Education.** Scottish Education Department, London:HMSO

HMI(1979) **Environmental Education in Curriculum 11-16,** Supplementary Working Papers, London: DES.



HUCKLE, J. (1998) **Environmental education – between modern capitalism and postmodern socialism. A reply to Lucie Sauvé.**  
[www.ec.gc.ca/eco/education/Paper3/Paper3\\_e.htm](http://www.ec.gc.ca/eco/education/Paper3/Paper3_e.htm)

HUCKLE, J. (2001) **Towards ecological citizenship**, in LAMBERT, D. & MACHON, P. (2001) *Citizenship through secondary geography*. London: Routledge Falmer

ICFD (2002) **Report of the International Conference on Financing for Development**. Monterrey-Mexico, 18-22 March 2002, United Nations.

INEP (2004). **Censo mostra que professor brasileiro tem perfil jovem.**  
[www.inep.gov.Br/imprensa/noticias/outras/news04\\_44.htm](http://www.inep.gov.Br/imprensa/noticias/outras/news04_44.htm)

International Research in Geographical and Environmental Education.(2001) Vol.10,No. 2

IUCN (1980) **World Conservation Strategy**, Gland, Switzerland: IUCN

IUCN, UNEP, WWF (1991) **Caring for the Earth: a strategy for sustainable living**. Gland, Switzerland: IUCN

JOB, D. (1996) **Geography and Environmental Education – an exploitation of perspectives and strategies** in KENT, A et al. *Geography in Education*. Cambridge: University of Cambridge.

JORDAN, A. & O'RIORDAN. (1999) **Environmental problems and Management** in CLOKE, P. & CRANG, P. & GOODWIN,M. *Introducing human geographies*. London: Arnold.

KAHN, R. (2004) **Towards ecopedagogy: radicalizing environmental education for the task ahead.** <http://getvegan.com/ee.htm>

KENT, A. (2000) **Geography and environmental education – really useful knowledge.**  
[www.ioe.ac.uk/conference2000/symposia/papers/kent.html](http://www.ioe.ac.uk/conference2000/symposia/papers/kent.html)

KERR, D. (1999) **Re-examining citizenship education: the case of England**. London: National Foundation for Educational Research.

KIRSCHNER, P. and BUCKINGHAM, S. and CARR, C. (2003) **Visualizing argumentation**. Software tools for collaborative and educational sense-making. London: Springer

KOWARICK, L. (1975) **Capitalismo e marginalidade na America Latina**. Sao Paulo: Paz e Terra.

LAMBERT, D. & MACHON, P. (2001) **Citizenship trough secondary Geography**. London: Routledge Falmer.

- LAMBERT, D. (2001) **Environmental Education and the school curriculum.** Viewpoint, no. 15. London: University of London.
- LAMBERT, D. (1999) **Geography and moral education in a supercomplex world: the significance of values education and some remaining dilemmas.** Ethics, Place and environment. V.2, no.1. London: Carfax Publishing.
- LAYARGUES, P. (2000) **Solving local environmental problem in Environmental Education: a Brazilian case study.** Environmental Education Research, Vol.6,no.2.London: Carfax Publishing
- LEFF, E. (2001) **Educacao ambiental e desenvolvimento sustentavel, in REIGOTA,M** (2001) Verde cotidiano : o meio ambiente em discussao. Rio de Janeiro :DP&
- LE GRANGE, L. (2004) **Embodiment, social praxis and environmental education: some thoughts.** Environmental Education Research. Vol. 10, London: Carfax Publishing
- LEWIN, M. (2004) **A teacher's schoolyard tale: illuminating the vagaries of practicing participatory action research (PAR) pedagogy.** Environmental Education Research. Vol. 10, Number 2, May, Hampshire: Carfax Publishing
- LEWIS, J. (2003) **Design issues.** In: Ritchie, J. and Lewis, J. Qualitative research practice. London: SagePublications.
- LOW, N. & GLEESON, B. (1998) **Justice, Society and Nature. An Exploration of Political Ecology.** London: Routledge.
- LOTZ-SISITKA, H. (2004) **Environmental education research and social change: southern African perspective.** Environmental Education Research. Vol. 10, London: Carfax Publishing
- McLAREN, P (1995) **Critical pedagogy and predatory culture.** Oppositional politics in a postmodern era. London: Routledge
- MARSDEN, B. (2001) **Citizenship education: permeation or pervasion? Some historical pointers,** in LAMBERT, D. & MACHON, P. (2001) Citizenship through Secondary Geography. London: Routledge Falmer.
- MARSHALL, T.H. and BOTTOMORE, T. (1996) **Citizenship and social class.** London: Pluto Press.
- MARX, K. & ENGELS, F. ( 1974 ) **German ideology.** London: Lawrence and Wishart.
- MEC (2000) **A implantacao da educacao ambiental no Brasil,** <http://www.mec.gov.br/sef/ambiental>
- MELROSE, M.J. (1996) **Got philosophical match? Does it matter?** In: Suber-Skerritt, O. New directions in action research, London: Falmer Press.

Millennium Summit (2000) **Report of Millennium Summit of the United Nations**. New York – from 6-8 September 2000, United Nation

MITCHELL, S. and ANDREWS, R. (2000) **Learning to argue in Higher education**. Portsmouth: Boynton/Cook Publishers, Inc

MOORE, A (2004) **The good teacher: dominant discourses in teaching and teacher education**. London: Routledge Falmer

MOORE, A. (2000) **Teaching and learning. Pedagogy, curriculum and culture**. London: Routledge Falmer

MYERSON, G. & RYDIN, I. (1996). **The language of environment. A new rhetoric**. London:UCL.

NAEE (1976). **A Statement of Aims**. Walsall, Staffordshire: National Association for Environmental Education.

NAJAM, A (2002) **From Rio to Johannesburg: progress and prospects – The road to Johannesburg. Environment. Sept, 2002.**  
[www.findarticles.com/p/articles/mi\\_1076/is\\_7\\_44/ai90702211](http://www.findarticles.com/p/articles/mi_1076/is_7_44/ai90702211)

ORR, D. (2001) Preface of STERLING, S. (2001). **Sustainable Education**. Bristol: JW Arrowsmith

O'RIORDAN, T. (1989) **The challenge for environmentalism**. in: R. Peet and N. Thrift (eds) London: U.Hyman

O'RIORDAN, T. (2002) **Johannesburg and sustainability science**. Economic and research council. [www.esrc.ac.uk/ESRCCcontent/downloads/TheEdgeNov.pdf](http://www.esrc.ac.uk/ESRCCcontent/downloads/TheEdgeNov.pdf)

PAYNE, P. (1999) **Postmodern challenges and moderns horizons: education for being for the environment**. Environmental Education Research. Vol. 5, London: Carfax Publishing

PALMER, J. (1998) **Environmental Education in the 21<sup>st</sup> Century. Theory, practice, progress and promise**. London: Routledge

PEPPER, D. (1993). **Eco-Socialism from Deep Ecology to Social Justice**. London: Routledge

PEPPER, D. (1996) **Modern environmentalism. An introduction**. London : Routledge.

PEPPER, D. (1984) **The roots of modern environmentalism**. Great Britain: Billing and Sons Limited, Worcester.

PLANT, M. (1994) **Education for the environment: towards an agenda for high education**. Birmingham : Staff and Educational Development Association.

QUINTAS, J. (2002) **Educacao ambiental e cidadania: uma construcao necessaria.** Adia – Dossie Meio Ambiente, in [www.cefetsp.br](http://www.cefetsp.br)

REDCLIFT, M (1987) **Sustainable development. Exploring the contradictions.** London: Routledge.

REIGOTA, M. (1994) **O que e educacao ambiental.** Sao Paulo : Brasiliense

REIGOTA, M (2001) **Verde cotidiano : o meio ambiente em discussao.** Rio de Janeiro: DP&a

School Council (1974). **Project Environment – Ethics and the Environment,** Harlow: Longman.

REISS, M. (2003) **Science education for social justice** in VICENTE, C. Education and identity. London: Routledge Falmer

ROBSON, C. (2002) **Real world research.** Oxford: Blackwell

ROBBINSON, V. (1994) **The practical promise of critical research in educational administration.** Educational Administrative Quarterly Vol. 30

ROBOTTOM, I and HART, P. (1993) **Research in Environmental Education. Engaging the debate.** Australia: Deakin University Press.

SCOTT, W. and OULTON, C. (1999). **Environmental education: arguing the case for multiples approaches.** Educational Studies, V.25, n.1. London: Taylor and Francis.

SOLIANI, A. (2001) **Pobreza volta a crescer no segundo mandato de FHC.** Data Folha, 10.09.2001, <http://www.uol.com.br/folha/brasil>

STERLING, S. (2001). **Sustainable Education.** Bristol: JW Arrowsmith

STERLING, S. (1996). **Education in change** in HUCKLE, J. & STERLING, S. (Eds) Education for sustainability. London: Earthscan.

SCOTT, W (2001). **Securing commitment to sustainable development: ethical and curriculum paradoxes.** The journal of development education association. V.8.1, Nov.2. London: Trentham Books

SCHUMACHER, E.F. (1976) **Small is beautiful.** London: Abacus.

STOLMAN, J. & LIDSTONE, J. (2001) **Citizenship education: a necessary perspective for Geography and Environmental Education,** in International Research in Geographical and Environmental Education. Vol.10, no.3. Grain Britain: Cambrian Printers

TESCH, R. (1990) **Qualitative research**. Analysis types and software tools. London: The Falmer Press.

TOYNE, P. (1993) **Environmental responsibility: an agenda for further and higher education: report of a Committee on Environmental Education in Further and Higher Education**, appointed by the Department for Education and the Welsh Office/Chairman: Peter Toyne

TRIVINOS, A. ( 1988) **Introducao a pesquisa social em Ciencias Sociais**. Sao Paulo: Atlas.

UNCED (1992) **Agenda 21**. Earth Summit 92 Rio de Janeiro. London: The Regency Press.

UNESCO (1977) **First Intergovernmental Conference on Environmental Education**. Final Report, Tbilissi, USSR. Paris:Unesco.

UNESCO (1987) **International Congress on Environmental Education and Training**. Moscow/Paris. Unesco.

VALLE, L.H.B. (1999). **Avaliação institucional emancipatória: contribuição de Jurgen Habermas**. Tese de doutorado. PUC São Paulo.

VASCONCELOS, H. (1998) **A pesquisa-acao em projetos de educacao ambiental**, in: A. de G. Pedrini (Ed.). **Educacao ambiental: educacao e praticas contemporaneas**. Petropolis :Vozes

WADE, Ros. (2001) **Global citizenship: choices and change**, in LAMBERT, D. & MACHON, P. (2001)**Citizenship through secondary geography**. London: Routledge Falmer

WANDERLEY, M.B. (1993). **Metamorfoses do desenvolvimento de comunidade no Brasil**. Sao Paulo: Cortez.

WCED (1987) **Our Common Future**. Oxford: Oxford University Press.

WINTER, R. (1996) **Some principles and procedures for the conduct of action research**. In: ZUBER-SKERRITT, O. **New directions in action research**. London: Falmer Press.

WSSD (2002) **Report of the World Summit on Sustainable Development**. Johannesburg, South Africa, 26 August-4 September 2002, United Nations.

ZUBER-SKERRITT, O. (1996) **New directions in action research**. London: Falmer Press.

## **Appendix 1**

### **Interview questions used during the pilot study - English and Portuguese versions.**

1. What is your understanding of environmental education?
2. How do you develop environmental education issues in your everyday practice?
3. What is the contribution of environmental education on student's life?
4. What can be changed in the teaching and learning process on environmental education?
5. In what ways must the curriculum be changed to contribute to the development of environmental education?
6. What do you understand by 'argument'?
7. Is it possible to "allow" argument in classroom?
8. How can teachers develop political and ethical environmental education? Is this possible?
9. Is it possible to promote critical teaching and learning process during the lessons?
10. What is the relationship between environmental education, social justice and citizenship?

1. Qual sua compreensão sobre educação ambiental?
2. Como você trabalha educação ambiental durante as suas aulas?
3. Qual é a contribuição da educação ambiental para a vida dos alunos?
4. O que pode ser mudado no ensino e aprendizagem da educação ambiental?
5. O currículo deve ser mudado para contribuir para a educação ambiental?
6. O que você entende por 'argumento'?
7. É possível desenvolver a cultura do argumento na sala de aula?
8. Como os professores podem desenvolver uma educação ambiental ética e política? É possível?
9. É possível promover um ensino aprendizagem crítico durante as aulas?
10. Qual é a relação entre justiça social, cidadania e educação ambiental?

## **Appendix 2**

### **Questionnaire questions used during the pilot - English and Portuguese versions**

- 1.How can the teachers work environmental issues in their everyday practice?
- 2.How can teachers and students develop moral and ethical environmental education?
- 3.How can education promote critical teaching and learning process which break with detached and isolated practices without political engagement?
- 4.Is it possible to promote strategies in order to develop a “new culture of argument” around environmental concerns among students?
- 5.What strategies have you used to develop the environmental education during this period?
- 6.Which were the results? Positive and negative points.

- 1.Como os professores podem trabalhar assuntos ambientais no dia-adia da escola?
- 2.Como podem os professores e alunos desenvolverem uma educação ambiental ética e moral na escola?
3. Como a educação pode promover uma relação de ensino e aprendizagem crítica a qual rompa com práticas segmentadas sem um engajamento político?
4. É possível promover estratégias para desenvolver na escola uma nova “cultura do argumento” entre os alunos em relação à educação ambiental?
5. Que estratégias você usou para desenvolver a educação ambiental durante este período?
- 6.Quais foram os resultados? O que deu certo e o que não deu certo? Por quê?

## Appendix 3

### Evaluation sheet for the organisation of workshops.

1. What was your expectation for the workshops?
2. What was your expectation for action research?
3. What is your opinion about the workshops. Positive and negative aspects
4. Do you think that the contents of the workshop were satisfactory?
5. In your opinion what could be improved?
6. In your opinion was the organisation of the time satisfactory?
7. Did the workshops lead you to reflect on environmental issues and environmental education? Yes? No? Why?
8. What was the greatest difficulty you found in participating in the workshops?

1. Qual foi a sua expectativa sobre a oficina?
2. Qual a sua expectativa em participar de uma pesquisa como a pesquisa ação?
3. Qual a sua opinião sobre a oficina? (pontos positivos e negativos)
4. Os conteúdos discutidos foram satisfatórios?
5. O que poderia ter sido melhor organizado?
6. O tempo para as atividades foi satisfatório?
7. A oficina levou você a refletir sobre o meio ambiente e a educação ambiental? Sim? Não? Por quê?
8. Qual a maior dificuldade que você encontrou durante a oficina?



## Appendix 4

### The interview questions (first and second phase) - English and Portuguese versions.

Interviews questions 1<sup>st</sup> phase:

1. What do you think environmental education is?
2. In your opinion what is the main goal of environmental education?
3. How do you carry out environmental education in your everyday practice with pupils?
4. Can the curriculum and contents in environmental education be considered satisfactory?

Interviews questions 2<sup>nd</sup> phase

1. Do you feel that you changed your impressions on environmental education after the professional development? Please, say why?
2. Was it possible to allow the new culture of argument in the classroom to develop critical thinking? In what ways?
3. It was possible to use emancipatory environmental education to promote social changes and citizenship in students' lives? How?
4. Have you felt that environmental education was able to promote students' emancipatory actions towards social justice? Could you give me some examples?
5. Have you found some barriers to developing emancipatory environmental education in your everyday practice? If yes, please, could you say which they are?
6. In your opinion can the environmental education curriculum be considered satisfactory in achieving qualitative changes towards citizenship?

Portuguese version – interviews 1<sup>st</sup> phase

1. O que é educação ambiental?
2. Qual é a principal meta da educação ambiental?
3. Como você desenvolve a educação ambiental no dia-a-dia da escola?
4. Você acha que o currículo é satisfatório para trabalhar educação ambiental?

Portuguese version – interviews 2<sup>nd</sup> phase

1. Você acha que mudou sua compreensão sobre educação ambiental?

2. Foi possível trabalhar com os alunos a chamada nova cultura do argumento para desenvolver o pensamento crítico?
3. Foi possível desenvolver um processo crítico através da educação ambiental no sentido de promover mudanças sociais e cidadania ecológica?
4. Você acha que foi possível desenvolver atitudes emancipatórias para a vida dos alunos?  
Como?
5. Você encontrou barreiras na prática para trabalhar com uma educação ambiental crítica?
6. O currículo pode ser considerado satisfatório para desenvolver cidadania?

## Appendix 5

### English version of evaluation sheet

#### Evaluation of environmental education workshops

1- Name of your school: \_\_\_\_\_

2- Please indicate in which workshop(s) you participated:

( ) 1<sup>st</sup> workshop ( ) 2<sup>nd</sup> workshop ( ) 3<sup>rd</sup> workshop ( ) all workshops

3-What was your expectation for the workshops?

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4-What was your expectation in participating in action research?

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5-Please indicate the extent to which you agree with the following statements:

	<i>Strongly agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Workshops contents can be considered satisfactory				
The organisation of time in the workshops was satisfactory				
The activities during the workshops were adequate (explanation, discussions, discussion in the groups ...)				
The workshops led you to reflect on environmental issues and Environmental Education				
The environment (room...) was appropriated				
The involvement among the participants was positive				
The resources (video, texts, transparencies...) used were appropriate				

6- In order to organise the workshops what could have been improved?

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7-What was the greatest difficulty, you found in participating in the workshops?

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8-Please could you describe the positive and negatives aspects of the workshops:

♦ Positive aspects: \_\_\_\_\_

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♦ Negative aspects: \_\_\_\_\_

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Thanks for your time!

## Portuguese version of evaluation sheet

### Avaliação das Oficinas Temáticas

3- Nome da sua escola: \_\_\_\_\_

4- Por favor indique em qual (quais) oficinas você participou:

( ) 1ª oficina ( ) 2ª oficina

3- Qual era a sua expectativa em participar das oficinas?

\_\_\_\_\_

\_\_\_\_\_

4- Qual era sua expectativa em participar da pesquisa ação?

\_\_\_\_\_

\_\_\_\_\_

5- Por favor, indique com o que você concorda dos seguintes pontos:

	<i>Concordo plenamente</i>	<i>Concordo</i>	<i>Discordo</i>	<i>Discordo plenamente</i>
O conteúdo das oficinas foram satisfatórios				
A organização do tempo nas oficinas foi satisfatória				
As atividades durante as oficinas foram adequadas (explicações, discussões, discussões em grupos ...)				
As oficinas permitiram você refletir sobre a educação ambiental				
O local para as oficinas foram apropriadas				
O envolvimento entre os participantes foi positivo				
Os recursos usados foram apropriados (video, textos, transparências...)				

6- No sentido de organizar uma oficina o que poderia ser melhorado?

\_\_\_\_\_

\_\_\_\_\_

7- Qual foi a maior dificuldade que você teve para participar das oficinas?

\_\_\_\_\_

8- Por favor, aponte aspectos negativos e positivos das oficinas:

♦ Positivo : \_\_\_\_\_

\_\_\_\_\_

♦ Negativo: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Obrigado por seu tempo!

## Appendix 6

### Planning of the first workshop

Time	Goal	Development of activities	Content
8a.m.-8:30 a.m.	<ul style="list-style-type: none"> <li>Stimulate teachers in reflecting on their role during the action research process.</li> <li>Point out essential characteristics to the development of research such as disposition, commitment and communication among participants.</li> </ul>	<ul style="list-style-type: none"> <li>Motivation of participants.</li> <li>Interaction among participants.</li> </ul>	<ul style="list-style-type: none"> <li>Set up group situation (through group dynamics) where participants will have the task to discuss the significance and importance of working in teams.</li> </ul>
8:30 – 9:30 a.m.	<ul style="list-style-type: none"> <li>Presentation of the main characteristics of the action research methodology.</li> </ul>	<ul style="list-style-type: none"> <li>Explanation by researcher.</li> </ul>	<ul style="list-style-type: none"> <li>Action research: concepts, principles and methodology.</li> </ul>
9:30 – 9:45 a.m.	<ul style="list-style-type: none"> <li>Coffee break</li> </ul>		
9:45 – 11:00 am	<ul style="list-style-type: none"> <li>Presentation of the theoretical background of the research.</li> </ul>	<ul style="list-style-type: none"> <li>Explanation by researcher.</li> </ul>	<ul style="list-style-type: none"> <li>Theoretical background:               <ol style="list-style-type: none"> <li>1) Environmental education: concepts;</li> <li>2) Environmental education in today's society: sustainable development;</li> <li>3) Critical theory and "new culture of argument" linked with social justice and citizenship.</li> </ol> </li> </ul>
11:00- 12 a.m.	<ul style="list-style-type: none"> <li>Involve teachers in reflecting on their own practice on the process of teaching and learning environmental education</li> </ul>	<ul style="list-style-type: none"> <li>Discussion by participants.</li> <li>Planning of the second workshop by participants.</li> </ul>	<ul style="list-style-type: none"> <li>Teachers organised in small groups will discuss their practice and reflect on the teaching and learning strategies during the research. Teachers will be provided with some guideline questions as follows:               <ol style="list-style-type: none"> <li>1. What is your main concern in relation to environmental education and its goals?</li> <li>2. Is it possible to develop an emancipatory environmental education in order to promote social justice in connection with students' lives? How?</li> <li>3. Could you develop an emancipatory environmental education during everyday</li> </ol> </li> </ul>

			<p>practice? How?</p> <p>4. Is it possible to promote strategies in order to “allow” a “new culture of argument” among pupils? How?</p>
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### Second part of the workshop

The idea of the second part of the workshop was to involve participants in reflecting on teachers’ strategies and guidelines in environmental education over the following year as follows:

<b>Time</b>	<b>Goal</b>	<b>Development of activities</b>	<b>Content</b>
1:15-1:30 p.m.	<ul style="list-style-type: none"> <li>Stimulate teachers into reflecting on their everyday practice as active agents.</li> </ul>	<ul style="list-style-type: none"> <li>Motivation of the participants through a tale.</li> </ul>	<ul style="list-style-type: none"> <li>Narration of a tale based on environmental concerns and social justice. Narrator: Jefferson Mainardes – teacher at University of Ponta Grossa-Brazil.</li> </ul>
1:30 – 2 p.m.	<ul style="list-style-type: none"> <li>Presentation of a report about the development of emancipatory environmental education and action research.</li> </ul>	<ul style="list-style-type: none"> <li>Presentation by a teacher from the pilot school.</li> </ul>	<ul style="list-style-type: none"> <li>Teacher from the pilot school will recount her experience during the pilot study. Her presentation includes:               <ol style="list-style-type: none"> <li>1) Her expectations before and after the implementation of the experiment at the school.</li> <li>2) Positive and negative aspects found during the pilot.</li> <li>3) The results of the experiment.</li> </ol> </li> </ul>
2 – 3:45 p.m.	<ul style="list-style-type: none"> <li>Involve teachers in the preparation of the general planning to develop environmental education classrooms during the following months.</li> </ul>	<ul style="list-style-type: none"> <li>Work on teaching strategies.</li> </ul>	<ul style="list-style-type: none"> <li>Teachers will work on the planning of the topics, goals, strategies and production of materials in order to put these into practice with their students.</li> </ul>
3:45 – 4 p.m.	Coffee break		
4 – 5 p.m.	<ul style="list-style-type: none"> <li>Presentation by participants of the general planning.</li> </ul>	<ul style="list-style-type: none"> <li>Presentation by participants.</li> </ul>	<ul style="list-style-type: none"> <li>As the closing activity of the workshop, participants will be invited to present their planning.</li> </ul>

## Appendix 7

### Planning of the second workshop

#### First part of the workshop

Time	Goal	Development of activities	Content
8 a.m. - 11 a.m.	<ul style="list-style-type: none"> <li>Organise materials for the evaluation phase of the research.</li> </ul>	<ul style="list-style-type: none"> <li>Preparation by participants of the materials to be presented during the second part of the workshop in the afternoon (short reports, posters, photographs, etc).</li> </ul>	<ul style="list-style-type: none"> <li>Organisation of the materials by participants.</li> </ul>
11 a.m. - 1 p.m.	<ul style="list-style-type: none"> <li>Lunch time</li> <li>Going to School D for the second part of the workshop.</li> </ul>		

#### Second part of the workshop

Time	Goal	Development of activities	Content
1 p.m.-1:15 p.m.	<ul style="list-style-type: none"> <li>Stimulate teachers to reflect on their everyday practice as active agents.</li> </ul>	<ul style="list-style-type: none"> <li>Warm up.</li> <li>Motivation of the participants through a group activity.</li> </ul>	<ul style="list-style-type: none"> <li>One of the teachers carries out a short musical presentation. During the performance the audience is invited to sing and reflect about the following themes: <ul style="list-style-type: none"> <li>- meaning of life;</li> <li>-education,environment and equity.</li> </ul> </li> </ul>
1:15 - 4:00 p.m.	<ul style="list-style-type: none"> <li>Involve teachers in reflecting on, evaluating and discussing their practice.</li> </ul>	<ul style="list-style-type: none"> <li>Presentations of the main activities of each school by teachers;</li> <li>Discussion by participants on the results of the action research.</li> </ul>	<ul style="list-style-type: none"> <li>Teachers organised in groups from each school present a short account of the main activities carried out by each school with regard to environmental education. After the presentation they evaluated their practice according to guideline questions previously provided as follows: <ol style="list-style-type: none"> <li>1.What are your main concerns in relation to environmental education and its goals?</li> <li>2. Was it possible to realise that environmental education provides ways to develop students' critical thinking based upon social justice and citizenship principles? In what ways?</li> </ol> </li> </ul>

			<p>3. What were the results of the research process? Include both positive and negative aspects.</p> <p>4. Please point out some resources and difficulties found during the development of the action research process.</p>
4 – 4:30 p.m.	<ul style="list-style-type: none"> <li>Stimulate teachers to attend the exhibition.</li> </ul>	<ul style="list-style-type: none"> <li>Attendance at exhibition.</li> </ul>	<ul style="list-style-type: none"> <li>Exhibition (posters, photographs, models made by children during the lessons; toys and products made by students and teachers, from recycled material, etc).</li> </ul>
4:30-5 p.m.	<ul style="list-style-type: none"> <li>Closure of the workshop</li> </ul>		



## Appendix 8

### Example of the first and second interviews undertaken with the participant teachers

#### Teacher 9 – School A – First interview

##### *Question 1:*

**Researcher:** *What do you think EE is?*

**Teacher 9:** *I understand the word education to mean a process and the word environmental is a process too. Thus, environmental education means you teach children as human beings, to preserve and look after the environment where they live. Environmental education must highlight the fact that human beings form a part of the environment; if they destroy the environment they are destroying themselves. So, in my view environmental education is a long process, because it involves raising consciousness. In order to reach consciousness, you must begin with children, because the mentality of adults has already been formed. For this reason, it is better to begin with children because they can make their parents aware.*

**Researcher:** *So, do you think the task of environmental education is to encourage this?*

**Teacher 9:** *Yes. It is to make people aware. The teacher teaches about environment, etc. But what I think is valuable is that the children pass it on to their families and to their parents. The children often do everything the teacher asks them to do in the classroom (keep the room clean, for example) but at home they do not do the same because they do not have the support of their family. If you make children aware at school, they tend to pass it on to their parents, families and society.*

*Mankind is moving towards awareness, but at the same time it is moving backwards; people are destroying themselves. So, they must be aware of this so that they can stop it. They must be aware that they have to build and not destroy. (...) This has been happening in relation to the environment; men do things, change them and at the same time destroy them.*

##### *Question 2*

**Researcher:** *In your opinion what is the main goal of environmental education?*

**Teacher 9:** *It is to make human beings aware – to achieve awareness. As the environment is a part of life, human beings must love themselves first. The process of raising*

*consciousness starts with the individual being able to love others and to love nature. Because, if I love myself, if I have feelings, if I realise I am a human being, I will be more aware of the world where I live, from the moment I am conscious of it. I will realise that nature suffers. I will know that if I destroy a plant or a tree, I will not derive pleasure from doing so ... because I will suffer the consequences. For example, God gave us pure and clean water. But what has happened? Human beings pollute it, but who is causing this harm? The human beings themselves. Human beings are not aware - they think they are very powerful ... I think that nature reacts; we were given it free. It is the job of environmental education to work on this and, make people aware of it. But first, we must concentrate on children's self-esteem as human beings. Because if my self-esteem is low, I will not have any love for others or nature. My feelings are reflected in others.*

**Researcher:** *What are the children you work with like? Do they display low self-esteem?*

**Teacher 9:** *Yes, a lot.*

**Researcher:** *Why?*

**Teacher 9:** *A lack of family structure. For example, I have a pupil that hits you and pushes you if you touch him... One day, I don't know why, he hugged me and this touched me deeply. I have heard that he has lots of problems at home. The mother separated from the father and lives with someone else, she is even pregnant; the father of the baby she expects is this other man and the boy does not accept that, because he was very close to his father. The mother does not let him see his father. So, all this is reflected in the child's life ... For this reason we must work on the child's self-esteem, otherwise how can he know he has love, that he is a special person, that he was made by God, if he lives like that at home.*

*Then you work on environmental education notions of hygiene, good behaviour, etc... and they learn they cannot throw paper on the ground... they are conscious of this. But it is a shock for them when they want to pass it on to their parents, because many parents do not accept it, because they have not acquired this kind of awareness.*

### **Question 3**

**Researcher:** *How do you carry out environmental education in your everyday practice with pupils?*

**Teacher 9:** *In environmental education, I begin by working on how to look after the classroom, which is the environment where they live day today. They participate actively. I*

*include a lot of reading. They make reports. They always recount what happens every day in the classroom. I work a lot with music and poetry... they associate everything with their own reality. The other day I brought the song Planeta Água (Water Planet) by Guilherme Arantes and I found it interesting because I told them that in the world there is more water than land. They thought it intriguing and one of the pupils said "How can the world have so much water when it is so distant from us?" And then I explained it to them.*

#### **Question 4**

**Researcher:** *Can the curriculum and contents in environmental education be considered satisfactory?*

**Teacher 9:** *In my opinion, the programme is very good in itself, but I also think that it should focus on the parents and pupils' families too. When you work on a subject related to the environment, you feel that the children want to know more but I find that parents tend to resist this willingness to learn – they say: "This is foolish". You try to teach certain values to the children and they do not accept them. Often the pupils say: "Teacher, my mother told me not to do that". The school has worked hard on environment such as by organizing demonstrations, recyclable material collection, etc ... but I think it is difficult to make parents aware that they need to take part in the programme too. So, I think that as well as working with the children, we should also work with parents.*

#### **Teacher 9 – School A – Second interview**

##### **Question 1:**

**Researcher:** *Do you feel that you have changed your impressions of environmental education after the professional development? If so, please say why?*

**Teacher 9:** *Yes, I do! Because through the project of environmental education [action research] I had to do research, to study and to read a lot. So, I think I changed my professional conception of teaching environmental education. For instance, I used to have a narrow conception of the environment. That is, for me, environmental education only referred to taking care of nature – preserving the environment. So, I realised that environmental education is more than this. I mean, it is a broad subject. Environmental education involves notions of citizenship, that is, it is related to duties and rights. So I can see it is a wide-ranging conception. For sure, I've changed my ideas a lot. Before the*

*development of the project [action research], I thought that environmental education was only related to teaching about forests, for instance. That is, about the environment itself. But now I realise that the environment involves other things such as citizenship, social integration, etc. It is an interdisciplinary topic. During the project [action research] I began to connect environmental education with other subjects. It was very interesting ...*

*As a result of the action research, I realised that I should study more about environmental education. Sometimes, we teachers have a conception that students are not able to be critical. But I think that students are inserted in a social context, which means they are able to be critical people. It was very interesting for me when I motivated them to carry out research in a strategic way arising from their own social context and based on their real conditions. So, they used to bring to the classroom information to discuss during the lessons. Sometimes, teachers think the students don't know anything. But I can see they have a lot of knowledge which can be used during the classes. We teachers often tend only to transmit our knowledge to students. No, now I can see we should use the cultural background of the students in the classroom.*

## **Question 2**

**Researcher:** *Was it possible to introduce the 'new culture of argument' in the classroom to develop critical thinking? In what ways?*

**Teacher 9:** *I think that the development of critical thinking is a process. That is, the results are not immediate. So I haven't had feedback from the students straightaway. However, I can see that the students are becoming more critical.*

**Researcher:** *Could you give an example of this?*

**Teacher 9:** *We, my students and I, organised an activity about the topic Pollution. Well, first I discussed with them the theoretical aspects of pollution. After that, we tried to transform theoretical knowledge into practical knowledge. We organised an outdoor activity where the students tried to identify what kind of pollution can be found around the school. And I observed that the students drew on the knowledge that they obtained from environmental education activities with their parents at home. That is, they started to discuss with their parents the importance of taking care about rubbish. Many parents used to throw their domestic rubbish into the stream. By the way, many students used the stream to swim in – we discussed this a lot with the students. The students and I went 'to visit' the*

*stream. So many students observed that the stream was not an appropriate place to swim in and they started to advise other children from the neighbourhood to avoid swimming in the stream. So, I think the process of raising consciousness is related to a capacity to apply the knowledge which they have learnt in the school about environmental care during their everyday practice.*

### **Question 3**

**Researcher:** *Was it possible to use emancipatory environmental education to promote social changes and citizenship in students' lives? If so, how?*

**Teacher 9:** *Before the research, environmental education and citizenship were separate subjects to me. That is, they were unconnected. And I realised that both issues are connected. So, I think that it is necessary to raise the consciousness of the children to bring about social change. Subsequently children should become aware of the environment, and thus influence their families and the people from the community. This can be achieved through information and knowledge that they have learnt in the school. The social change is possible when there is a process of consciousness-raising among the people. We got some progress regarding social changes and citizenship once children started learning how to argue. I can observe this during the lessons.*

### **Question 4**

**Researcher:** *Have you felt that environmental education was able to result in emancipatory actions and social justice on the part of the students? Could you give me some examples?*

**Teacher 9:** *Children are not afraid of anything. When you say to them: "Let's do this or that?" They easily accept it. They are very enthusiastic. But the problem is their families. I mean the process of fostering emancipatory actions doesn't only depend on children themselves. Children accept everything that you try to teach them. So, when the teacher tries to organise a different activity which is aimed at emancipating children actions, he/she faces problems with the children's parents. I mean the parents do not always understand what the teacher is trying to do during the lesson. The children's families are very complicated. Let me give you an example. When I discussed with them the topic Pollution, we, students and I, organised an activity in which the students had to warn the parents and people from the neighbourhood about avoiding throwing rubbish onto the*

streets. The children did this. We organised a procession around the school to demand better environmental conditions for the people. However, some people from the neighbourhood didn't like that. They complained about it. So, as you can see, sometimes it is quite difficult!

#### Question 5

**Researcher:** *Have you found any barriers to carrying out emancipatory environmental education in your everyday practice? If so, please, could you say what they are?*

**Teacher 9:** *I think I faced some difficulties regarding the way parents understood the process of teaching. For instance, the parents didn't bring the materials that I asked the children to bring to the classroom. The students' parents have a wrong understanding about environmental education. For instance, some of my students told me that their parents complained about the environmental education activities. The great problem is that the parents expected the school to solve all its pedagogical problems by itself. As well as this, the parents don't realise that it is necessary to encourage critical teaching ... they can't understand it! And teachers need the parents' involvement. But they [parents] can't understand this. The parents think that the teacher should do everything by herself without disturbing them. So I think the great barrier that I found was the lack of support from the parents when organising the activities. In fact, the main problem was the lack of participation on the part of the students' families.*

*In addition, the students' parents think that the task of education is to convey knowledge. But now I think that it is not enough just to convey knowledge to students. Education must penetrate students' lives. The participation of the parents in the process is essential to do this.*

#### Question 6

**Researcher:** *In your opinion can the environmental education curriculum be considered satisfactory in bringing about qualitative changes towards citizenship?*

**Teacher 9:** *Well, I think that there are a lot of things which can still be improved with regard to the curriculum. But, I think the curriculum is good. It depends on the teacher's practice. It's the teacher who carries out the pedagogical practice. There are different schools and different student circumstances. So, it's the teacher who undertakes the*

*practice in accordance with the students' real conditions. It's the teacher who conducts the teaching process. This was a thing that I've learnt during the action research. In addition, a very important thing that I liked a lot was the interdisciplinary aspect of the environmental education project.*

**Researcher:** *Did you really like it? Why? Didn't you use to carry out environmental education like this before?*

**Teacher 9:** *No, I used to teach environmental education in an isolated way. In a different way, during the research when I was discussing the question of citizenship with the students I was able to connect it with other things such as environmental education, Portuguese Language, Literature ...and their real lives. I've really become committed to this.*

**Researcher:** *Did you feel comfortable in doing this? Didn't this situation cause you any trouble?*

**Teacher 9:** *No, I liked it a lot. It was very demanding, but it was very good. I think the environment is something that is part of us in our everyday practice, so it is very important. The results were satisfactory.*

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

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